



# **Adams Green Transportation Improvements**

## **FUNCTIONAL DESIGN REPORT**

*Prepared for*  
Massachusetts Department of Transportation  
City of Quincy, Massachusetts

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## Introduction

The City of Quincy has been pursuing a series of improvements and redevelopment opportunities to revitalize its downtown. Downtown Quincy has excellent transit access and adequate off-street parking—particularly south of Granite Street—but has long suffered from lack of direct vehicle connections to I-93 and Route 3. Construction of Burgin Parkway created a major north-south connection. The Concourse, christened Mayor Hannon Parkway and completed October 2011, provides an east-west connection between Granite Street and Route 3A.

At the present time, an ambitious downtown Master Plan of mixed-use development is envisioned for the area bounded by the MBTA Quincy Center station, Burgin Parkway, Mayor Hannon Parkway, Chestnut Street, Temple Street, and Washington Street. At the northern end of this district, a major open space called Adams Green is planned in order to celebrate Quincy Town Hall, City Hall, United First Parish Church, and the historic burial ground; to calm traffic along Washington Street, Hancock Street, and Coddington Street; and to enhance pedestrian connections to the Quincy Center MBTA station.

This report presents the functional design to close off a portion of Hancock Street between Washington Street and Temple Street to vehicular traffic, thereby altering the traffic patterns in Quincy Center.

Because Hancock Street currently carries a high proportion of regional through traffic, its discontinuance will require circulation changes and capacity enhancements to accommodate diverted traffic. The closure and other changes will also affect on-street parking and loading for several downtown blocks.

The standards used for analysis and signal design conform to the *2009 Manual on Uniform Traffic Control Devices* (MUTCD 2009); the *2000 Highway Capacity Manual* (HCM 2000); the American Association of State Highway and Transportation Officials (AASHTO) manual *A Policy on Geometric Design of Highways and Streets*, 5th Edition; and the MassDOT *Project Development and Design Guide* (2006).

### Study Area

The following 7 intersections constitute the primary study area for this report, as shown in **Figure 1**:

1. Burgin Parkway/Dimmock Street;
2. Hancock Street/Dimmock Street/Adams Street/Johnson Avenue;
3. Hancock Street/Washington Street;
4. Washington Street/Temple Street/Coddington Street;
5. Hancock Street/Temple Street;
6. Maple Street/Chestnut Street (unsignalized); and,
7. Hancock Street/Granite Street.

Because the construction of Adams Green will have impacts that extend outside of the primary study area, the study area has been extended to include the following external locations:

8. Newport Avenue/Furnace Brook Parkway;
9. Hancock Street/Furnace Brook Parkway;
10. Burgin Parkway/Newport Avenue/Adams Street;
11. Hancock Street/Huntley Road (unsignalized);
12. Southern Artery/Sea Street/Coddington Street;
13. Washington Street/Foster Street (unsignalized);
14. Washington Street/McGrath Highway;
15. Washington Street/Elm Street (unsignalized);
16. Mayor Hannon Parkway/Dennis Ryan Parkway/Miller Stile Road;
17. Elm Street/Miller Stile Road (unsignalized);
18. Hancock Street/Mayor Hannon Parkway;
19. Hancock Street/Quincy Avenue/School Street/Elm Street;
20. Burgin Parkway/Granite Street;
21. Granite Street/School Street/Quarry Street (unsignalized);
22. Washington Street/Maple Street (unsignalized); and,
23. Granite Street/Whitwell Street.



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**Figure 1. Locus Map and Study Area Intersections**



### PRIMARY PROJECT STUDY AREA

- 1 Burgin Parkway/Dimmock Street
- 2 Hancock Street/Dimmock Street/  
Adams Street/Johnson Avenue
- 3 Hancock Street/Washington Street
- 4 Washington Street/Temple Street/Coddington Street
- 5 Hancock Street/Temple Street
- 6 Maple Street/Chestnut Street
- 7 Granite Street/Hancock Street
- 8 Furnace Brook Parkway/Newport Avenue

### EXTENDED STUDY AREA

- 9 Furnace Brook Parkway/Hancock Street
- 10 Burgin Parkway/Newport Avenue/Adams Street
- 11 Hancock Street/Huntley Road
- 12 Southern Artery/Sea Street/Coddington Street
- 13 Washington Street/Foster Street
- 14 Washington Street/McGrath Highway
- 15 Elm Street/Washington Street
- 16 Mayor Hannon Parkway/Dennis Ryan Parkway/  
Miller Stile Road
- 17 Elm Street/Miller Stile Road
- 18 Mayor Hannon Parkway/Hancock Street
- 19 Hancock Street/Quincy Avenue/  
School Street/Elm Street
- 20 Granite Street/Burgin Parkway
- 21 Granite Street/School Street/Quarry Street
- 22 Washington Street/Maple Street
- 23 Granite Street/Whitwell Street



## Existing Conditions

This section describes existing study area roadway geometry, intersection conditions with existing traffic volumes and intersection geometry, average daily traffic levels, and peak-hour vehicular volumes.

### Existing Roadway Conditions

The intersections are the junctions of the following roadways, which are categorized according to MassDOT Office of Transportation Planning functional classifications:

#### Primary Study Area Roadways

**Hancock Street** is an urban principal arterial that runs in a north-south direction from the Boston/Quincy border in the north to School Street in the south. For most of its length, Hancock Street is a two-way roadway with one lane in each direction. However, within the primary study area, Hancock Street is approximately 66 feet wide with two 12-foot travel lanes in each direction, with the exception of the section between Washington Street and Temple Street. In this section of the roadway, Hancock Street is one-way in the southbound direction with 4 travel lanes. Nine-foot parking lanes are provided on both sides of Hancock Street with a mix of handicap, 15-minute, 1-hour, and 2-hour time restrictions, Monday through Saturday. Sidewalks are provided on both sides of the roadway. The speed limit on Hancock Street is 30 mph.

**Burgin Parkway** is an urban minor arterial that runs in a north-south direction extending from Adams Street to Route 3. Burgin Parkway is a two-way roadway that is approximately 46 feet wide with two 11-foot travel lanes in each direction and 1-foot shoulders on each side of the roadway. Within the study area, the posted speed limit is 30 mph. Parking is not provided along Burgin Parkway, although sidewalks are provided on both sides of the roadway.

**Dimmock Street** is an urban collector that runs in an east-west direction between Burgin Parkway and Hancock Street; however, Dimmock Street is a local road to the west of Burgin Parkway terminating at Euclid Avenue. Within the study area, Dimmock Street is a two-way roadway that is approximately 44 feet wide with a 21-foot lane in each direction. Parking is provided on Dimmock Street to the west of Burgin Parkway, but is not allowed between Burgin Parkway and Hancock Street. Sidewalks are provided on both sides of the roadway.

**Adams Street** is an urban principal arterial that generally runs in an east-west direction extending from Bowdoin Street in Dorchester to Hancock Street in Quincy. Within the study area, Adams Street is approximately 42 feet wide with a travel lane in each direction. Parking is provided on both sides of the street. Sidewalks are provided on both sides of the street. The speed limit on Adams Street is 30 mph.

**Johnson Avenue** is a local road that provides access to two residential homes and the rear loading area for 1130 Hancock Street. Johnson Avenue is approximately 22 feet in width, with one lane in each direction. No sidewalks are provided along the roadway.

**Washington Street** is an urban principal arterial that generally runs in an east-west direction extending from Hancock Street to the town line of Quincy/Weymouth. Within the study area Washington Street is approximately 52 feet wide with an 18-foot travel lane in each direction. Eight-foot parking lanes are provided on both sides of Washington Street with a mix of handicap, 30-minute, and 1-hour time restrictions, Monday through Saturday. Sidewalks are provided on



both sides of the roadway. MBTA Buses 220, 221, and 222 run along Washington Street within the study area.

**Temple Street** is an urban principal arterial that generally runs in an east-west direction from Hancock Street to Washington Street. Temple Street is approximately 44 feet wide and is one-way in the eastbound direction. Parking is provided on a portion of the south side of the roadway. Sidewalks are provided on both sides of the roadway.

**Coddington Street** is an urban principal arterial that generally runs in an east-west direction. Coddington Street is approximately 44 feet wide with a 14-foot travel lane in each direction. Eight-foot parking lanes are provided on both sides of Coddington Street with a mix of handicap, 1-hour, and 2-hour parking restrictions, Monday through Saturday. Sidewalks are provided on both sides of the roadway.

**Maple Street** is an urban collector that runs in a north-south direction between Chestnut Street and Washington Street. Maple Street is a one-way in the northbound direction with a mix of handicap, 1-hour, and 2-hour restricted parking, Monday through Saturday on the south side of the roadway. Sidewalks are provided on both sides of the roadway.

**Chestnut Street**, also known as **Dennis Ryan Parkway**, is an urban collector that runs in a general east-west direction between Hancock Street and McGrath Highway. Chestnut Street is a two-way roadway with one lane in each direction. Restricted 1-hour and 2-hour parking is provided on the north side of the roadway. Sidewalks are provided on both sides of the roadway.

**Granite Street** is an urban minor arterial that runs in a north-south direction between Hancock Street and Packards Lane. From Packards Lane to Water Street, Granite Street becomes a local roadway. Within the study area, Granite Street runs in a more east-west orientation. Granite Street is a two-way roadway with one lane in each direction. Parking on the north side of Granite Street between Presidents Lane and Whitwell Street is restricted to 1-hour. Sidewalks are provided on both sides of the roadway.

### Extended Study Area Roadways

**Newport Avenue** is an urban minor arterial that runs in a north-south direction extending from West Squantum Street to Adams Street. Newport Avenue is approximately 44 feet wide with two lanes in each direction. The posted speed limit is 30 mph. Parking is prohibited along the length of the roadway, and sidewalks are provided on the west side of the roadway only.

**Furnace Brook Parkway** is an urban minor arterial that runs in an east-west direction from Willard Street to Quincy Shore Drive. Furnace Brook Parkway is approximately 25 feet wide with 1 lane in each direction. Within the study area, parking is not allowed on either side of the roadway, and a sidewalk is only provided on the northern side of the road.

**Huntley Road** is a local road that runs east-west from Hancock Street to Woodward Avenue. Huntley Road has 1 travel lane in each direction and varies in width. On-street parking is not allowed for the majority of the roadway.

**Southern Artery (Route 3A)** is an urban principal arterial that generally runs in a north-south direction from Hancock Street to Washington Street. To the north of Coddington Street, Southern Artery has 1 travel lane in each direction. To the south of Coddington Street, Southern Artery has 2 travel lanes in each direction. Sidewalks are provided on both sides of the street. On-street

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parking is not allowed within the project study area. The speed limit on Route 3A ranges from 25 mph to 50 mph.

**Sea Street** is an urban minor arterial that runs in an east-west direction from the Southern Artery to Mears Avenue. For the majority of its length, Sea Street has 2 travel lanes in each direction. Sidewalks are provided on both sides of the street. On-street parking is not allowed on either side of the roadway.

**Foster Street** is an urban collector that runs in a north-south direction from Chestnut Street to Washington Street. Foster Street has 1 travel lane in each direction with sidewalks and on-street parking on both sides of the roadway.

**McGrath Highway (Mayor Hannon Parkway)** is an urban minor arterial the runs in an east-west direction from Granite Street to the Southern Artery. This roadway was recently constructed in phases to provide an east-west connection between Burgin Parkway and Route 3A. The last phase of construction was completed in October 2011. McGrath Highway has 2 travel lanes in each direction with a center median separating the eastbound and westbound directions. Sidewalks are provided on both sides of the roadway. On-street parking is not allowed.

**Elm Street** is an urban collector that extends from McGrath Highway to Hancock Street. Elm Street is one-way in the southbound direction from McGrath Highway to Washington Street. From Washington Street to Hancock Street, Elm Street has 1 travel lane in each direction. In general, no on-street parking is allowed along Elm Street. Sidewalks are provided along both sides of the roadway for the majority of its length.

**Miller Stile Road** is an urban collector that runs in the north-south direction from Elm Street to Mayor Hannon Parkway. Miller Stile Road has 1 travel in each direction with no on-street parking allowed on either side of the roadway. Sidewalks are provided on both sides of the street.

**Quincy Avenue** is an urban principal arterial that runs in a north-south direction from Elm Street to Commercial Street at the Braintree/Weymouth town line. Quincy Avenue generally has 2 travel lanes in each direction. Some on-street parking is allowed on the west side of the street between School Street and Water Street. Sidewalks are provided along both sides of the roadway.

**School Street** is an urban minor arterial that runs in an east-west direction from Hancock Street to Granite Street. In general, School Street has 1 travel lane in each direction. On-street parking is allowed on both sides of the roadway between Franklin Street and Hancock Street. Sidewalks are provided on both sides of the street.

**Quarry Street** is an urban minor arterial that runs in an east-west directions from Granite Street to Willard Street. Quarry Street has 1 travel lane in each direction. On the eastern section of Quarry Street, there are wide shoulders that can accommodate on-street parking. On the western section of Quarry Street on-street parking is not allowed. Sidewalks are provided on both sides of the street.

**Maple Street** is an urban collector that runs one-way in the northbound direction from Chestnut Street to Washington Street. Maple Street has 1 travel lane with on-street parking allowed on the east side of the roadway. Sidewalks are provided on both sides of the street.

**Whitwell Street** is an urban collector that generally runs in an east-west direction from Adams Street to Granite Street. Whitwell Street has 1 travel lane in each direction. On-street parking is not allowed on either side of the roadway for most of its length. There is a small section of on-street parking allowed near the medical center. Sidewalks are provided on both sides of the street.

## Existing Traffic Conditions

### Primary Study Area Intersections

**Burgin Parkway/Dimmock Street** is a signalized intersection with 4 approaches. The Dimmock Street eastbound approach has a shared left-turn/through/right-turn lane. The Dimmock Street westbound approach consists of a left-turn lane and a shared through/right-turn lane. The Burgin Parkway northbound approach has 3 lanes that operate as a shared left-turn/through lane, a through lane, and a right-turn lane. The Burgin Parkway southbound approach operates as a shared left-turn/through lane and a shared through/right-turn lane. Parking is allowed on the south side of Dimmock Street to the west of the intersection. Crosswalks and wheelchair ramps are provided across all of the approaches.

**Hancock Street/Dimmock Street/Adams Street/Johnson Avenue** is a signalized intersection with 6 approaches. The Dimmock Street eastbound approach has a left-turn/through lane and a right-turn-only lane. The Whitney Street westbound approach has a single, general-use lane. The Hancock Street northbound approach consists of a left-turn lane, a bear-left lane to continue onto Adams Street, and a shared through/right-turn lane. The southbound Hancock Street approach includes a shared left-turn/through lane and a shared through/right-turn lane. The Adams Street southeast-bound approach consists of a shared left-turn/bear-right lane and a shared bear-right/right-turn lane. The Johnson Avenue westbound approaches the intersection about 150 feet to the north of Whitney Road. Parking is allowed on both sides of Hancock Street to the south of the intersection. Crosswalks and wheelchair ramps are provided across all approaches. This location has an exclusive pedestrian phase that is actuated by pushbutton.

**Hancock Street/Washington Street** is a 3-leg, signalized intersection with 2 approaches. The Hancock Street southbound approach has 2 through lanes. The Washington Street westbound approach has 2 left-turn lanes and 2 right-turn lanes. A channelization island separates the Washington Street movements while also providing a pedestrian refuge. Parking is allowed along approaches to the intersection. Crosswalks and wheelchair ramps are provided across Hancock Street.

**Washington Street/Temple Street/Coddington Street** is a 4-leg, signalized intersection with 3 approaches. The eastbound Temple Street approach consists of 4 travel lanes: 2 left-turn lanes, a through lane, and a right-turn lane. The Coddington Street westbound approach has 2 right-turn-only lanes. The Washington Street northbound approach includes a through lane and a shared through/right-turn lane. Parking is allowed on both sides of Washington Street to the south of the intersection and on the west side of Washington Street to the north of the intersection. Parking is also allowed on both sides of Coddington Street. Crosswalks and wheelchair ramps are provided across all sides of the intersection.

**Hancock Street/Temple Street** is a 3-leg, signalized intersection with 2 approaches. The Hancock Street northbound approach has 2 right-turn lanes. The Hancock Street southbound approach has 2 left-turn lanes and 2 through lanes. A channelization island separated the southbound movements while also providing a pedestrian refuge. Parking is allowed along approaches to the intersection. Crosswalks and wheelchair ramps are provided across all approaches.

**Maple Street/Chestnut Street** is a 4-leg, unsignalized intersection with 3 approaches. This intersection is approximately 100 feet north of the signal at Hancock Street/Granite Street. The Hancock Street northbound approach has a through lane and a shared through/right-turn lane. The Hancock Street southbound approach has 2 through lanes and a left-turn lane. Chestnut Street westbound has a single right-turn lane and left-turns are prohibited from this approach. Maple Street is one-way heading away from the intersection. The Hancock Street approaches are free flowing, while the Chestnut Street approach is stop-controlled. Crosswalks and wheelchair ramps are provided across Chestnut Street and Maple Street. On-street parking is allowed along the Hancock Street northbound and Chestnut Street approaches.

**Hancock Street/Granite Street** is a 3-leg, signalized intersection with 3 approaches. The Granite Street eastbound approach has 2 left-turn lanes and a right-turn lane. The Hancock Street northbound approach has single general use lane. The Hancock Street southbound approach consists of a shared through/right-turn lane and an exclusive right-turn lane. On-street parking is allowed along the northbound approach. Crosswalks and wheelchair ramps are provided across all approaches to the intersection.

### **Extended Study Area Intersections**

**Newport Avenue/Furnace Brook Parkway** is a signalized intersection with 4 approaches. The Furnace Brook Parkway eastbound and westbound approaches each have a single general use lane. The Newport Avenue northbound approach has a shared left-turn/through lane and a shared through/right-turn lane. The Newport Avenue southbound approach has 3 travel lanes that a generally used as a left-turn lane, a through lane, and a shared through/right-turn lane. On-street parking is not allowed along any of the approaches to this intersection. Crosswalks are provided across the northern and western sides of the intersection. There are no wheelchair ramps provided.

**Hancock Street/Furnace Brook Parkway** is a signalized intersection with 4 approaches. The Furnace Brook Parkway eastbound and westbound approaches have a single general use lane. The Hancock Street northbound approach has a shared left-turn/through lane and a shared through/right-turn lane. The Hancock Street southbound has a shared left-turn/through lane and a shared through/right-turn lane. On-street parking is only allowed along the east side of the southbound approach. An MBTA bus stop is located on the west side of the Hancock Street northbound approach. Crosswalks are provided across all approaches to the intersection. There are no wheelchair ramps provided.

**Burgin Parkway/Newport Avenue/Adams Street** is a signalized intersection with 4 approaches. The Adams Street eastbound approach has a left-turn lane and a shared through/right-turn lane. The Adams Street westbound approach has a shared left-turn/through lane and a right-turn lane. The Burgin Parkway northbound approach has a shared left-turn/through lane and a shared through/right-turn lane. The Newport Avenue southbound approach has a shared left-turn/through lane and a shared through/right-turn lane. On-street parking is not allowed along any of the approaches to this intersection. There is a trolley stop located on the north side of the Adams Street westbound approach. Crosswalks are provided along the northbound, eastbound, and westbound approaches. Wheelchair ramps are provided across the northbound and eastbound approaches.

**Hancock Street/Huntley Road** is an unsignalized intersection with 3 approaches. The Huntley Road westbound approach has an exclusive right-turn lane. Left-turns are prohibited from this

approach; however, vehicles make this movement illegally. The Hancock Street northbound approach has a through lane and a shared through/right-turn lane. The Hancock Street southbound approach has a shared left-turn/through lane and a through lane. On-street parking is provided on both sides of Hancock Street. A crosswalk and wheelchair ramps are provided across the Huntley Road westbound approach.

**Southern Artery/Sea Street/Coddington Street** is a signalized intersection with 4 approaches. The Southern Artery eastbound approach has a shared left-turn/through lane and a shared through/right-turn lane. The Southern Artery westbound approach has a shared left-turn through lane, an exclusive through lane, and two channelized exclusive right-turn lanes. The channelized right-turn lanes are signal-controlled. The Coddington Street northbound approach consists of shared left-turn/through lane and a shared through/right-turn lane. The Sea Street southbound approach operates as 2 left-turn lanes, a through lane, and a channelized right-turn lane. The channelized right-turn lane is signal-controlled. On-street parking is prohibited at all approaches of this intersection. Crosswalks and wheelchair ramps are provided across all approaches.

**Washington Street/Foster Street** is an unsignalized intersection with 3 approaches. The Washington Street eastbound approach has a shared through/right-turn lane. The Washington Street westbound land has a shared left-turn/through lane. The Foster Street northbound approach has a shared left-turn/right-turn lane. On-street parking is provided on both sides of Washington Street. An MBTA bus stop is provided on the south side of the Washington Street westbound approach. Crosswalks are provided across the northbound and westbound approaches. Wheelchair ramps are provided across the westbound approach.

**Washington Street/McGrath Highway** is a signalized intersection with 4 approaches. The Washington Street eastbound approach has a shared left-turn/through lane and a shared through/right-turn lane. The Washington Street westbound approach has a shared left-turn/through lane and a shared through/right-turn lane. The McGrath Highway northbound approach consists of a left-turn lane, a through lane, and a shared through/right-turn lane. The McGrath Highway southbound approach has a left-turn lane and 2 through lanes. Southbound vehicles wishing to turn right onto Washington Street are directed to use Wibird Street. Parking is not allowed along any of the approaches. Crosswalks and wheelchair ramps are provided across all of the approaches.

**Washington Street/Elm Street** is an unsignalized intersection with 4 approaches. The Washington Street eastbound approach has a shared through/right-turn lane. The Washington Street westbound approach has a shared left-turn/through lane. The Elm Street northbound approach has one shared left-turn/right-turn lane. Commercial vehicles are prohibited from using this roadway. The Elm Street southbound approach has one shared left-turn/through/right-turn lane. Elm Street to the north of Washington Street is one-way southbound. On-street parking is provided on the north side and south side of the eastbound approach, respectively. MTBA bus stops are provided on both the north and south sides Washington Street to the east of the intersection. Crosswalks and wheelchair ramps are provided across the northbound, southbound, and westbound approaches.

**Mayor Hannon Parkway/Dennis Ryan Parkway/Miller Stile Road** is a signalized intersection with 4 approaches. The Dennis Ryan Parkway eastbound approach has one exclusive left-turn lane and one shared through/right-turn lane. The Miller Stile Road westbound approach has one general use lane. The Mayor Hannon Parkway northbound approach has one shared left-turn/through land and one shared through/right-turn lane. The Mayor Hannon Parkway southbound approach

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has one shared left-turn/through lane and one shared through/right-turn lane. Bike lanes are provided on the Mayor Hannon Parkway approaches. All approaches have bike actuation with signage and pavement markings indicating where bicycles should wait for green light. On-street parking is provided on the north side of Dennis Ryan Parkway. Crosswalks, wheelchair ramps with tactile warning strips, and accessible pedestrian signals are provided across all approaches of the intersection.

**Elm Street/Miller Stile Road** is an unsignalized intersection with 3 approaches. The Elm Street eastbound approach consists of one through/right-turn lane. The Elm Street westbound approach consists of one left-turn/through lane. The Miller Stile southbound approach consists of one left-turn/right-turn lane and is stop-controlled. There is a parking lot entrance along the east side of the Elm Street adjacent to the intersection. A crosswalk is provided across the northbound approach, yet wheelchair ramps are provided across both the northbound and the westbound approaches.

**Hancock Street/Mayor Hannon Parkway** is a signalized intersection with 4 approaches. The Mayor Hannon Parkway eastbound approach has a through lane and a shared through/right-turn lane. The Mayor Hannon Parkway westbound approach has a through lane and a shared through/right-turn lane. On both the eastbound and westbound approaches, left-turns are prohibited. The Hancock Street northbound approach consists of a shared left-turn/through/right turn lane. The Hancock Street southbound approach has a shared left-turn/through lane and a 100-foot exclusive right-turn lane. Bicycle lanes are also provided on both sides of Mayor Hannon Parkway. Parking is provided on both sides of the Hancock Street. Crosswalks and wheelchair ramps with tactile warning strips are provided across all approaches.

**Hancock Street/Quincy Avenue/School Street/Elm Street** is a signalized intersection with 4 approaches. The School Street eastbound approach has an exclusive left-turn lane and shared through/right-turn lane. The Elm Street westbound approach has an exclusive left-turn lane, a through lane, and a stop-controlled, channelized right-turn lane. The Quincy Avenue northbound approach has an exclusive left-turn lane and a through/right-turn lane. The Hancock Street southbound approach has one left-turn/through lane and a right-turn lane. On-street parking is provided on the north side of the Elm Street and School Street. An MBTA bus stop is located on the west side Hancock Street to the south of the intersection. Crosswalks and wheelchair ramps with tactile warning strips are provided across all approaches.

**Burgin Parkway/Granite Street** is a signalized intersection with 4 approaches. The Granite Street eastbound lane has an exclusive left-turn lane, 2 through lanes, and a channelized right-turn lane. The Granite Street westbound approach operates as a left-turn lane, a shared left-turn/through lane, a through lane, and a channelized right-turn lane. The Burgin Parkway northbound approach has 2 through lanes and a right-turn lane. Left-turns are prohibited from this approach. The Burgin Parkway southbound approach operates as a left-turn lane, a through lane, and a right-turn lane. On-street parking is provided on the north side of Granite Street to the west of the intersection. Crosswalks and wheelchair ramps are provided across all approaches.

**Granite Street/School Street/Quarry Street** is an unsignalized intersection with 3 approaches. The Quarry Street eastbound approach has a through lane and a channelized right-turn lane. The Granite Street westbound approach has a through lane. The School Street north-westbound approach has a left-turn only lane. The Quarry Street and Granite Street approaches are free flowing, while the School Street approach is stop-controlled. Parking is not allowed along any of the approaches and there are no crosswalks or wheelchair ramps at this intersection.



**Washington Street/Maple Street** is an unsignalized intersection with 3 approaches. The Maple Street northbound approach is one-way northbound and has one left-turn/right-turn lane. The Washington Street east and westbound approaches have one through lane. Parking is provided on both sides of Washington Street. Parking is also provided on the east side of Maple Street. A crosswalk with wheelchair ramps is provided across the northbound approach.

**Granite Street/Whitwell Street** is a signalized intersection with 4 approaches. The Whitwell Street eastbound approach has a shared left-turn/through lane and a short channelized right-turn lane. The westbound approach is for a shopping plaza and consists of a shared left-turn/through/right-turn lane. The Granite Street northbound approach has a left-turn lane, a through lane, and a shared through/right-turn lane. The Granite Street southbound approach consists of a shared left-turn/through lane, a through lane, and a short channelized right-turn lane. Parking is not allowed along any of the approaches. On-street parking is allowed along the Granite Street approach to the north of the intersection. However, parking is restricted at the intersection to allow for the short right-turn lane.

### Daily Traffic Estimates

To estimate daily traffic and hourly variations, Automatic Traffic Recorder (ATR) counts were recorded for 4 days from Wednesday, November 16, 2011 through Saturday, November 19, 2011. Traffic count locations are shown in **Figure 2**.

The data from Wednesday and Thursday were averaged to estimate the daily traffic. On Hancock Street, only Wednesday data was available due to damage of the ATR tubes at this location. Additional counts were attempted the week of December 6, 2011; however, the tubes were once again damaged with less than 24 hours of usable data.

In reviewing the ATR data for each of the corridors, the variation in traffic volumes between the Wednesday counts and Thursday counts were very minimal. Therefore, the Hancock Street ADT was calculated with only the Wednesday data available.

Based on historic counts provided by MassDOT for a permanent count location in Quincy, November volumes are typically lower than the yearly average. Existing volumes for the analysis for this report have been seasonally adjusted by increasing the volumes by 1.7% to be consistent with the yearly average.



**Figure 2. Traffic Count Locations**





**Table 1** summarizes existing traffic data including Average Daily Traffic (ADT), peak-hour percentage (K), and percent heavy vehicles (T). Average daily traffic variations for each roadway are shown in **Figure 3** through **Figure 7**.

**Table 1. Average Weekday Traffic Volumes**

<b>Approach</b>	<b>ADT</b>	<b>K</b>	<b>T</b>
Hancock Street Northbound	12,757	6.7%	1.5%
Hancock Street Southbound	11,565	8.6%	3.5%
<b>Hancock Street TOTAL</b>	<b>24,322</b>	<b>7.6%</b>	<b>2.4%</b>
Washington Street Northbound	6,796	9.4%	2.5%
Washington Street Southbound	5,396	6.3%	3.4%
<b>Washington Street TOTAL</b>	<b>12,192</b>	<b>7.6%</b>	<b>3.0%</b>
Coddington Street Eastbound	5,992	9.2%	1.8%
Coddington Street Westbound	4,932	6.2%	2.3%
<b>Coddington Street TOTAL</b>	<b>10,924</b>	<b>7.9%</b>	<b>2.0%</b>
Burgin Parkway Northbound	12,482	11.2%	0.9%
Burgin Parkway Southbound	11,214	5.6%	4.4%
<b>Burgin Parkway TOTAL</b>	<b>23,696</b>	<b>8.6%</b>	<b>2.5%</b>
Mayor Hannon Parkway Eastbound	6,379	7.8%	0.4%
Mayor Hannon Parkway Westbound	5,625	6.2%	1.8%
<b>Mayor Hannon Parkway TOTAL</b>	<b>12,004</b>	<b>7.0%</b>	<b>1.0%</b>

ADT = Average Daily Traffic; K = Peak-hour Percentage; T = Percent Heavy Vehicles.

The ATR counts showed that the AM peak period extends from 7:00 to 9:00 AM and the PM peak period extends from 4:00 to 6:00 PM.

As shown in **Table 1** and the figures that follow, Burgin Parkway carries the majority of traffic in the north-south directions. The traffic variations for Mayor Hannon Parkway does not show peaks during the morning and evening rush hours. This roadway was opened approximately 1 month before the date of the counts. Travel patterns may not have fully adjusted yet to the opening of the new roadway.

Figure 3. Average Daily Traffic Variations, Hancock Street South of Huntley Road

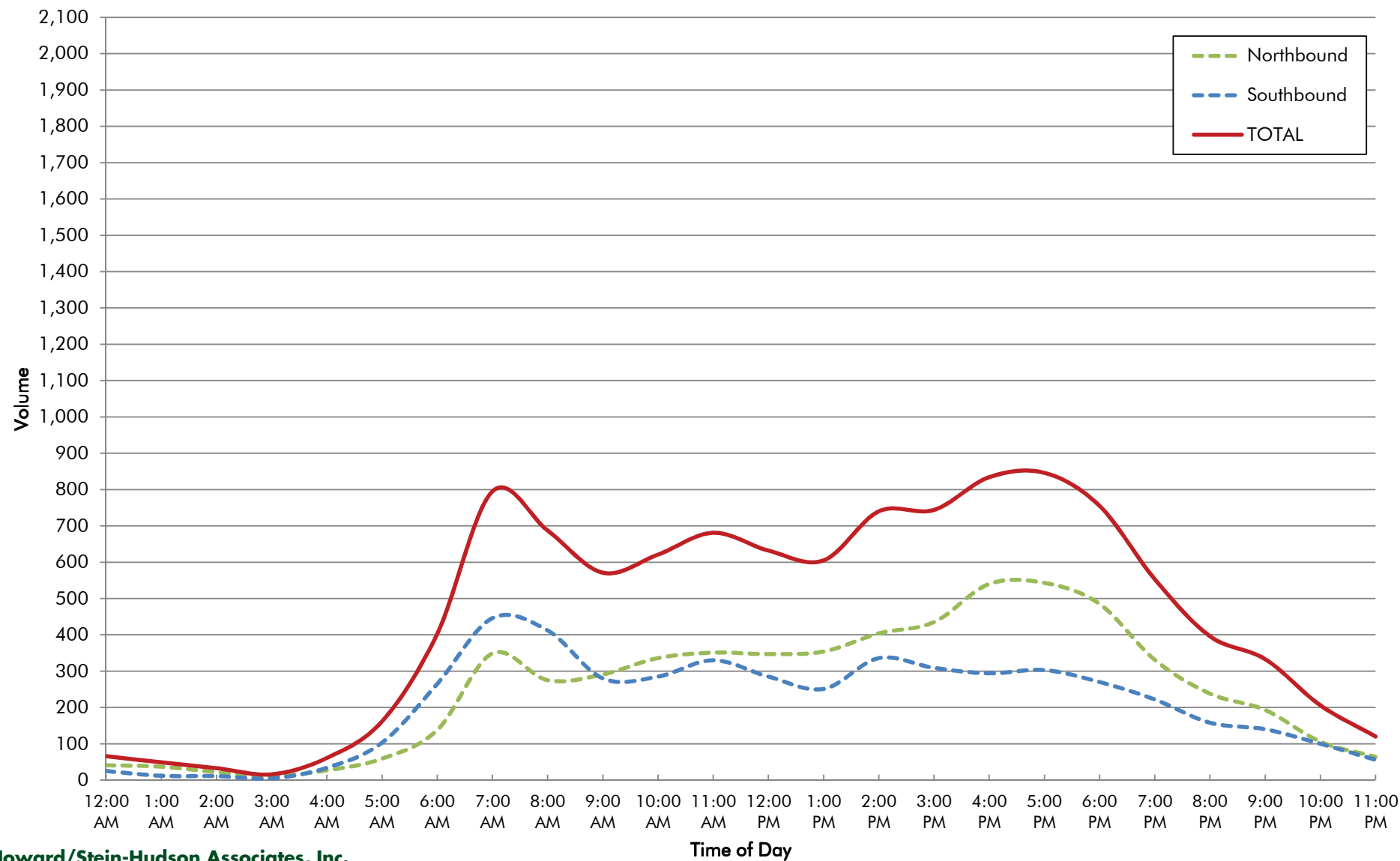


Figure 4. Average Daily Traffic Variations, Washington Street South of Maple Street

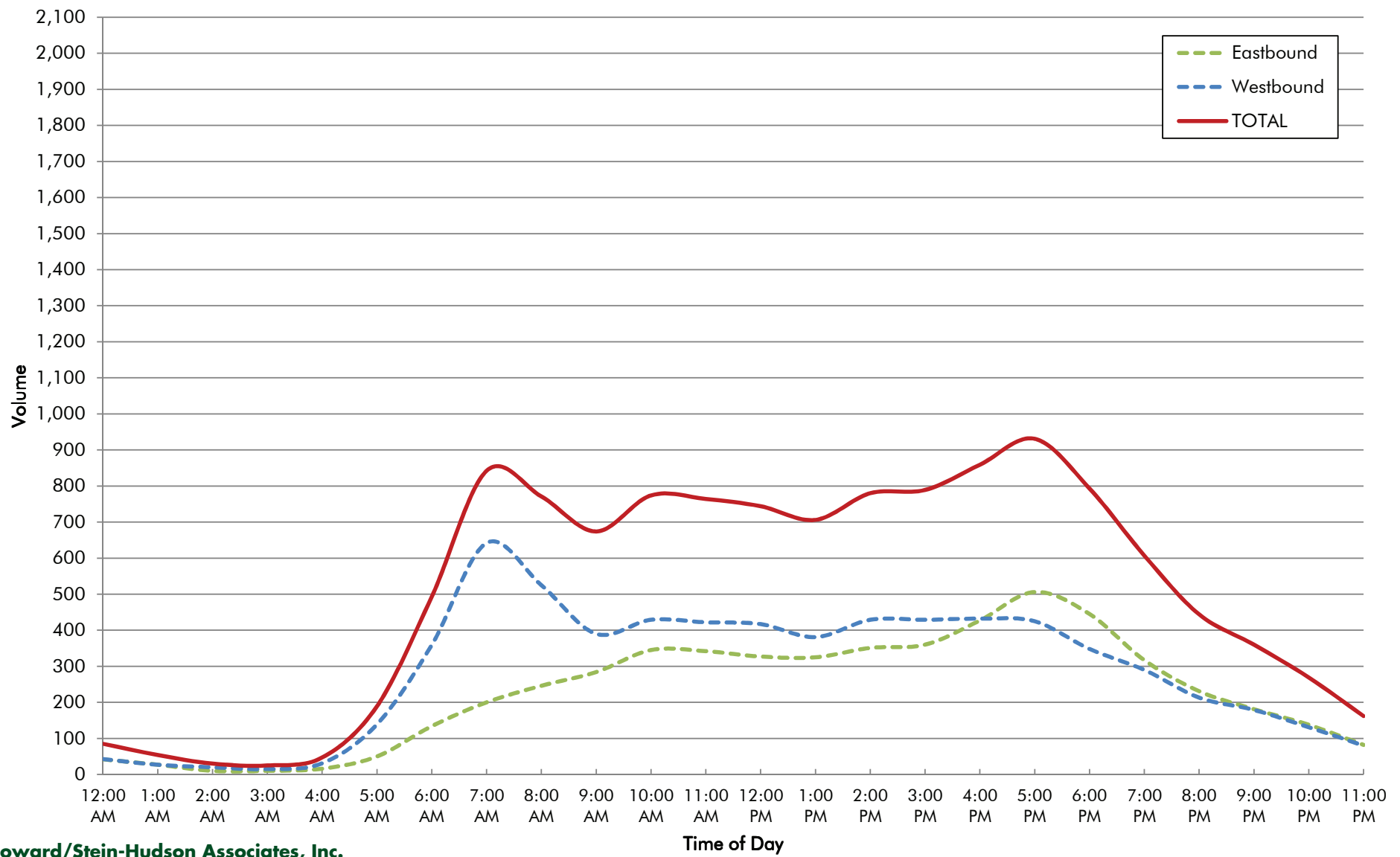


Figure 5. Average Daily Traffic Variations, Coddington Street East of Washington Street

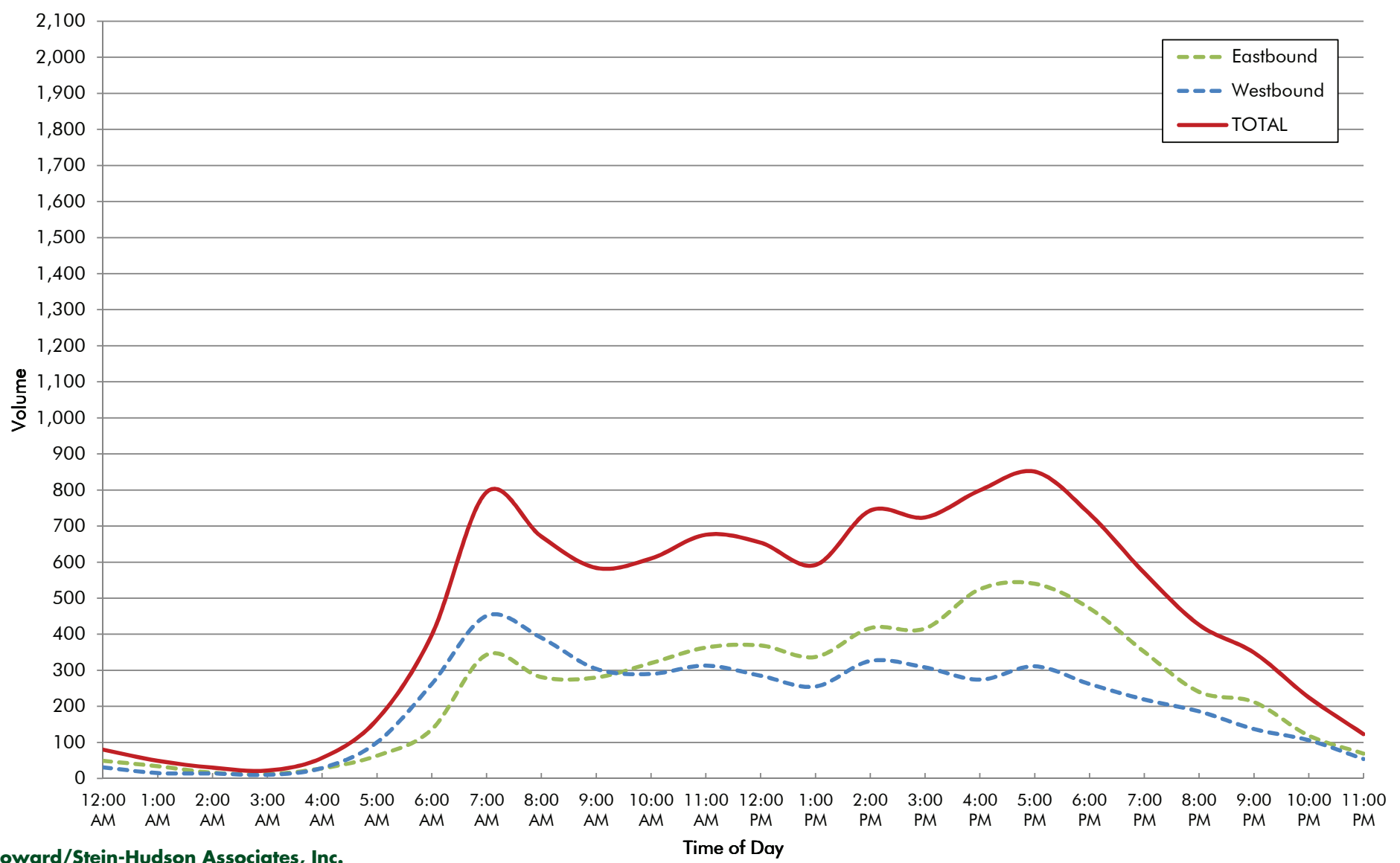




Figure 6. Average Daily Traffic Variations, Burgin Parkway North of Granite Street

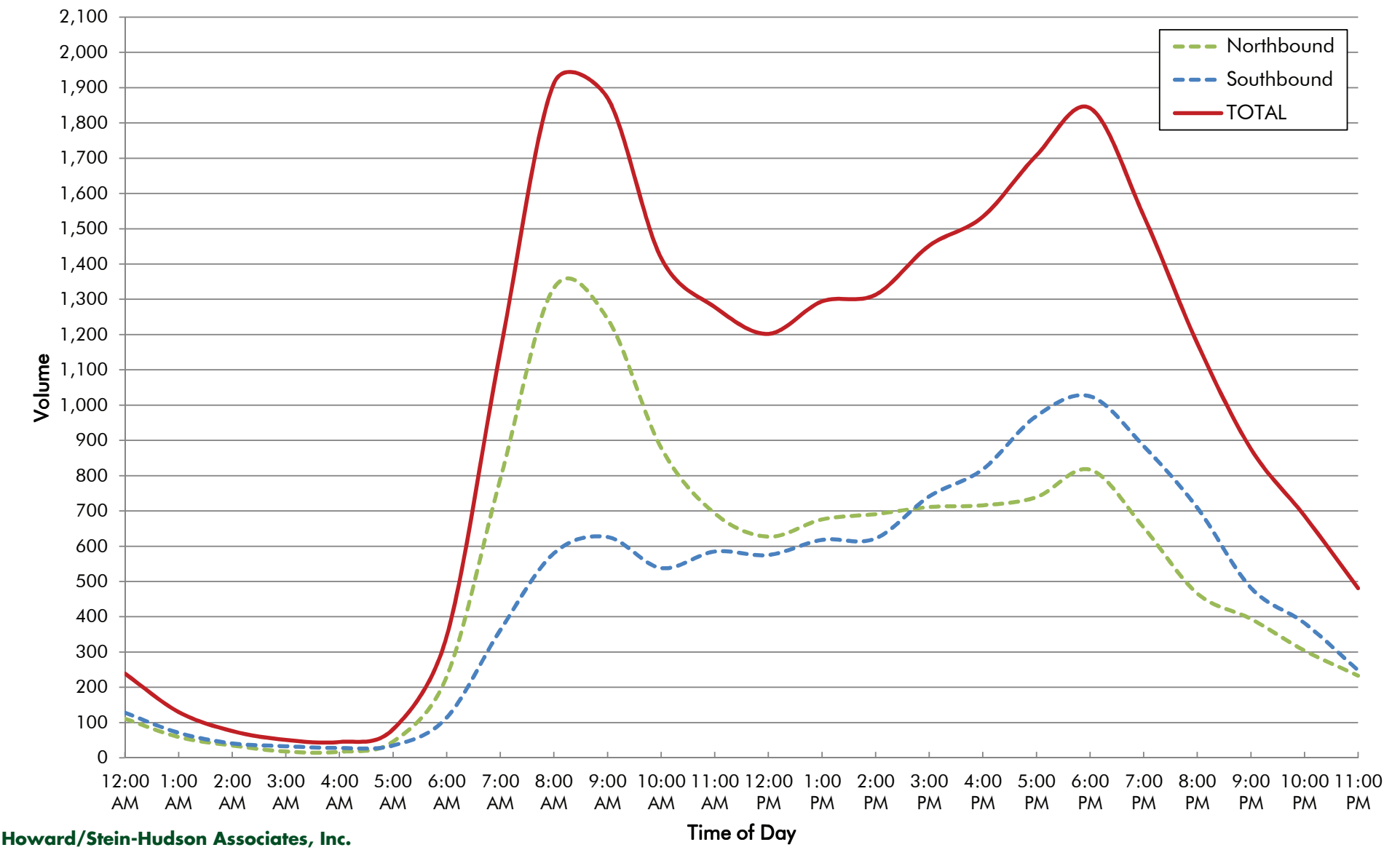
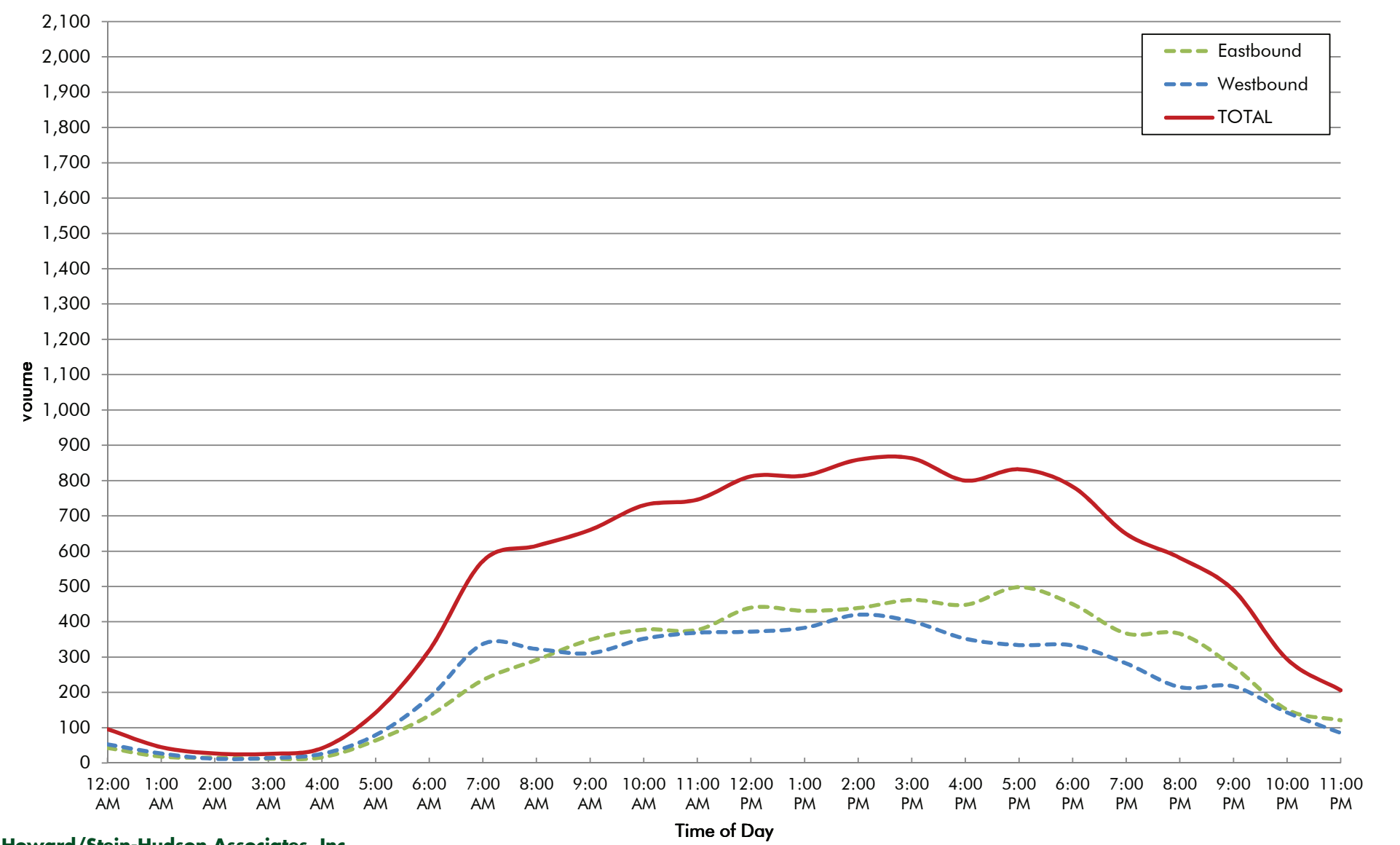


Figure 7. Average Daily Traffic Variations, Mayor Hannon Parkway West of Hancock Street



### Peak-hour Intersection Turning Movements

Manual Turning Movement Counts (TMCs) for all of the study area intersections were recorded during the morning (7:00–9:00AM) and evening (4:00–6:00 PM) peak traffic periods on November 15, 2011.

Saturday (11:00AM – 1:00PM) peak traffic period counts were also conducted for the primary study area intersections on November 19, 2011.

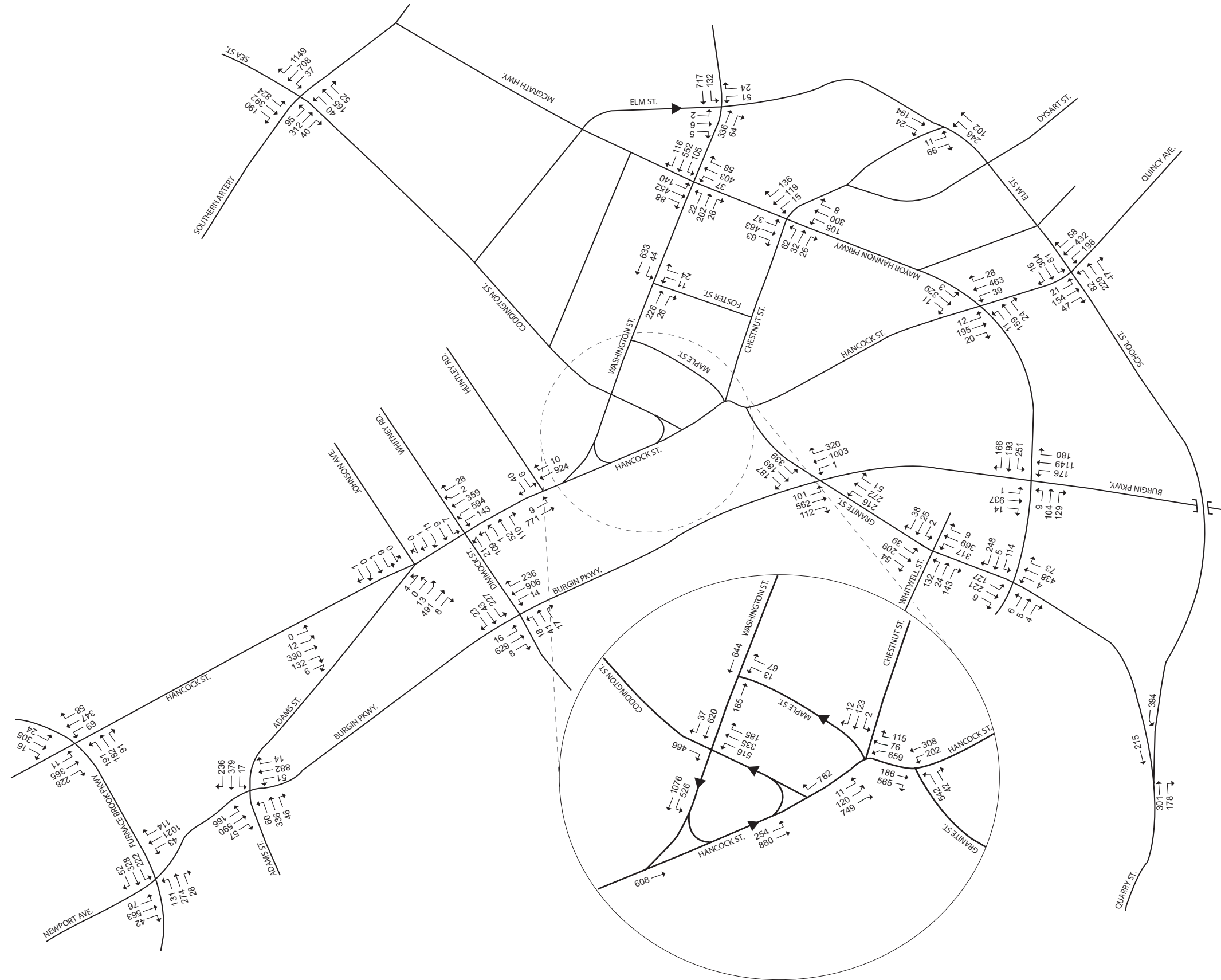
Pedestrians and bicycles were also counted at the same time as the vehicular counts.

From the TMCs, the morning and evening peak hours were determined to occur from 7:30 AM to 8:30 AM and from 4:45 PM to 5:45 PM, respectively. The peak-hour volumes are shown in **Figure 8** through **Figure 11**.

### Level of Service Analysis

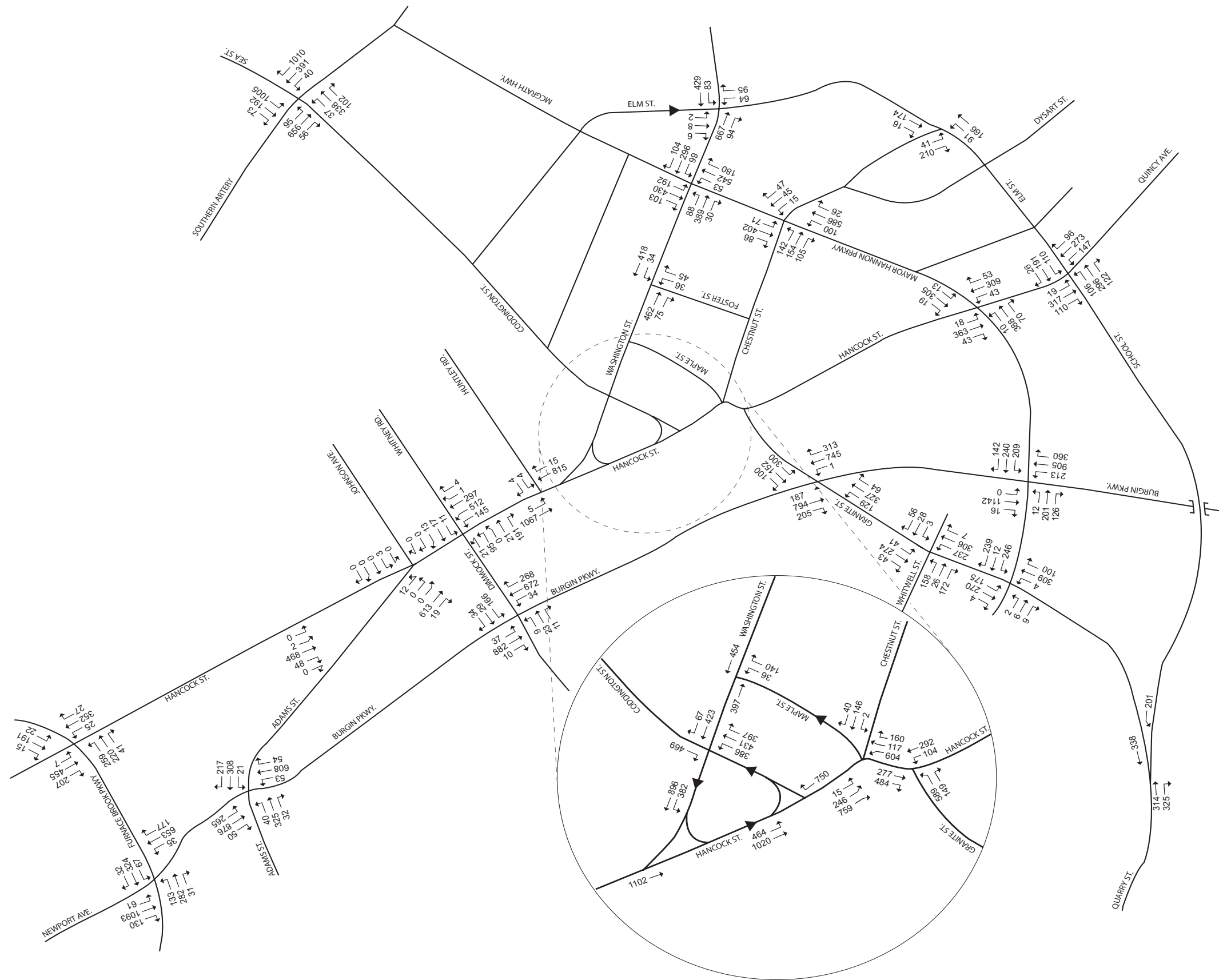
Traffic operations are determined through an analysis of intersection Level of Service (LOS) calculations. LOS at all of the intersections was calculated using Synchro 7.0, which is based on the traffic operational analysis methodology of the Transportation Research Board's 2000 *Highway Capacity Manual* (HCM). The LOS and delay (in seconds) are based on intersection geometry and traffic volumes. **Table 2**, an excerpt from the HCM, provides LOS criteria for signalized and unsignalized intersections. LOS A defines the most favorable condition, with minimum traffic delay. LOS F represents the worst condition, with significant traffic delay. LOS D is generally considered acceptable for urban environments.

**Figure 8. Existing Conditions (2012) AM Peak-hour Traffic Volumes (7:30–8:30 AM)**



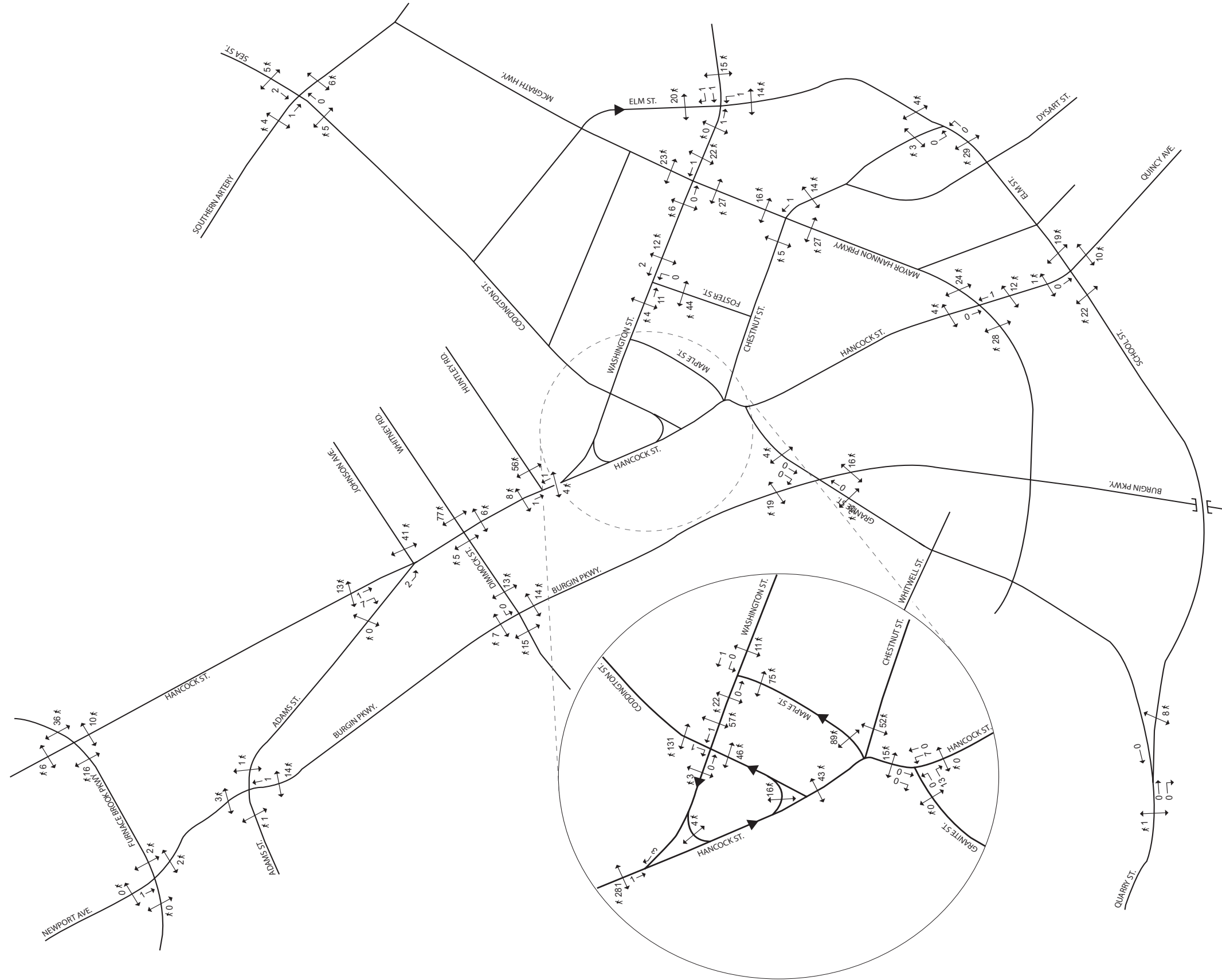
Not to scale.

**Figure 9. Existing Conditions (2012) PM Peak-hour Traffic Volumes (4:45–5:45 PM)**



Not to scale.

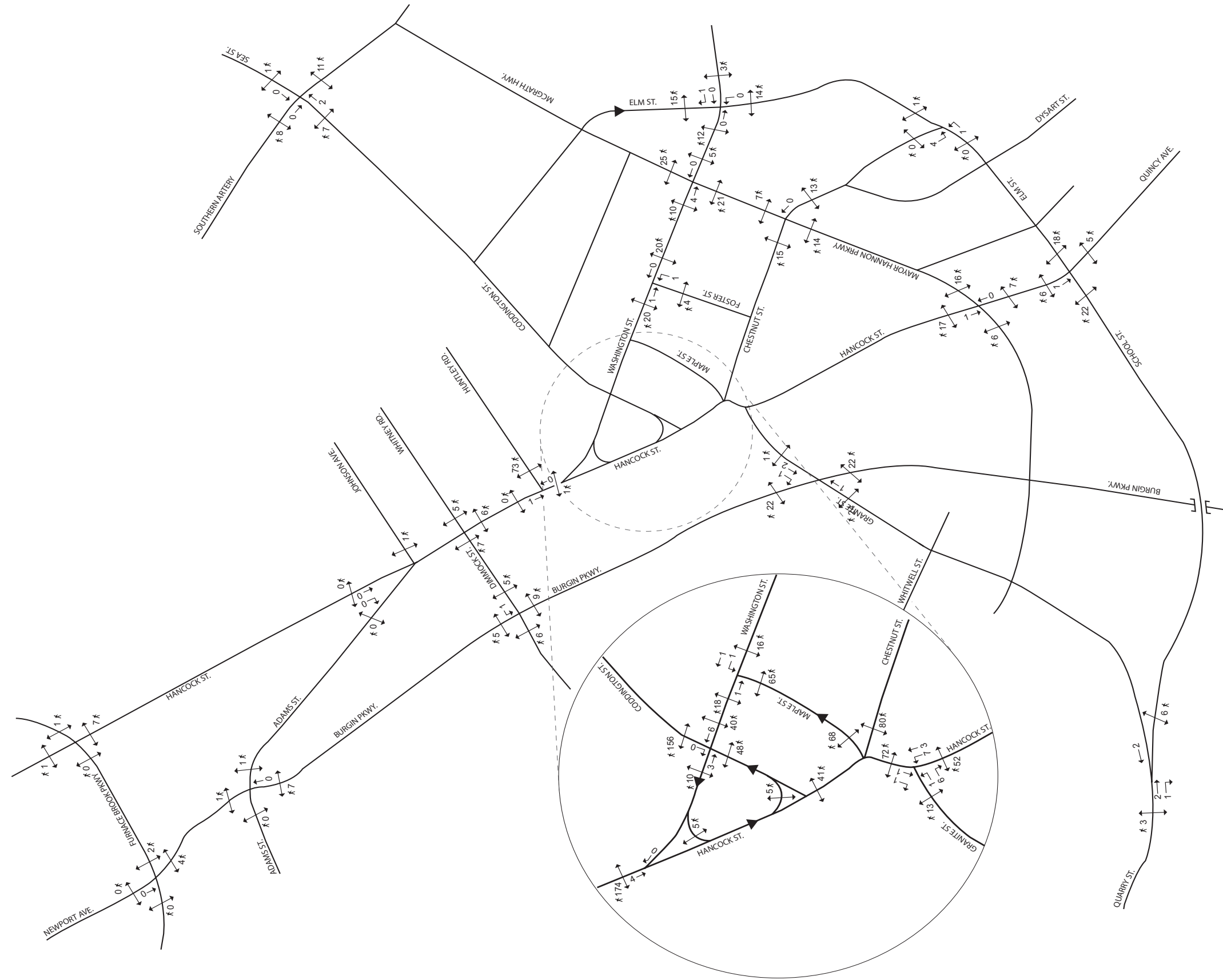
**Figure 10. Existing Conditions (2012) AM Peak-hour Pedestrian and Bicycle Counts  
(7:30–8:30 AM)**



Not to scale.



**Figure 11. Existing Conditions (2012) PM Peak-hour Pedestrian and Bicycle Counts (4:45–5:45 PM)**



Not to scale.

**Table 2. Level of Service Criteria, Signalized Intersections**

Level of Service	Average Stopped Delay (sec./veh.)	
	Signalized Intersection	Unsignalized Intersection
A	0.0–10.0	0.0-10.0
B	10.1–20.0	10.1-15.0
C	20.1–35.0	15.1-25.0
D	35.1–55.0	25.1-35.0
E	55.1–80.0	35.1-50.0
F	>80.0	>50.0

Source: Highway Capacity Manual, 2000. *Transportation Research Board.*

In accordance with MassDOT guidelines, the peak 15 minutes of data collected during the peak hour were isolated in order to calculate the peak-hour factors (PHFs) for each approach. The percentage of heavy vehicles was noted for each approach as well. All capacity analyses were checked against actual conditions in the field. Details of the Synchro analysis are provided in **Appendix B**.

**Table 3** and **Table 4** summarize the existing LOS, delay, volume to capacity ratio, and queue analysis for all intersections during both the morning and evening peak hours.

**Table 3. Existing Conditions (2012) Capacity Analysis Summary, AM Peak Hour**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Primary Study Area</b>					
<b>Burgin Parkway/Dimmock Street</b>	<b>B</b>	<b>15.2</b>	—	—	—
Dimmock EB left/thru/right	B	19.8	0.31	35	56
Dimmock WB left	D	37.2	0.82	90	#257
Dimmock WB thru/right	B	18.9	0.18	22	65
Burgin NB left/thru   thru	B	12.8	0.59	107	282
Burgin NB right	A	9.2	0.18	0	42
Burgin SB left/thru   thru/right	B	10.9	0.43	68	185
<b>Hancock Street/Dimmock Street/Adams Street/Johnson Avenue</b>	<b>F</b>	<b>&gt;80.0</b>	—	—	—
Dimmock EB left/thru	F	>80.0	>1.00	~139	#281
Dimmock EB right	C	26.7	0.38	57	94
Whitney WB left/thru/right	C	31.4	0.14	18	42
Hancock NB left	D	37.0	0.67	73	#161
Hancock NB bear left	F	>80.0	>1.00	~534	#842
Hancock NB thru/right	B	17.1	0.59	171	329
Hancock SB left/thru   thru/right	F	>80.0	>1.00	~227	#348
Adams SEB left/bear right	F	>80.0	>1.00	~286	#427
Adams SEB bear right/right	F	>80.0	>1.00	~309	#457
Johnson SWB left/right	F	>80.0	0.71	11	22
<b>Hancock Street/Washington Street</b>	<b>B</b>	<b>13.5</b>	—	—	—
Washington WB left   left	D	40.7	0.77	174	225
Washington WB right   right	A	3.9	0.61	0	247
Hancock SB thru   thru	A	7.3	0.36	84	143
<b>Washington Street/Temple Street/Coddington Street</b>	<b>C</b>	<b>27.9</b>	—	—	—
Washington WB thru   thru/right	C	32.7	0.74	201	#386
Temple NB left   left	C	31.2	0.77	145	176
Temple NB thru	C	20.9	0.54	173	202
Temple NB right	A	1.5	0.18	0	46
Coddington SB right   right	C	32.6	0.75	60	195
<b>Hancock Street/Temple Street</b>	<b>A</b>	<b>8.4</b>	—	—	—
Hancock NB right   right	A	7.4	0.52	75	271
Hancock SB left   left	C	34.4	0.63	101	129
Hancock SB thru   thru	A	1.6	0.44	54	60
<b>Maple Street/Chestnut Street &amp; Hancock Street/Granite Street</b>	<b>C</b>	<b>22.0</b>	—	—	—
Granite EB left	C	32.9	0.63	165	257
Granite EB left/thru	C	33.7	0.65	165	263
Granite EB right	C	25.4	0.09	17	44
Hancock NB left	B	15.1	0.55	123	m137
Hancock NB thru/right	B	18.0	0.51	208	m264
Hancock SB left	B	17.0	0.31	41	52
Hancock SB thru	C	24.6	0.45	118	189
Hancock SB right	C	21.7	0.75	445	541
Chestnut NWB right	A	0.2	0.13	0	0

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### Existing Conditions (2012) Capacity Analysis Summary, AM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Extended Study Area</b>					
<b>Newport Avenue/Furnace Brook Parkway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	E	76.9	>1.00	315	#675
Furnace Brook WB left/thru/right	F	>80.0	>1.00	~545	#1041
Newport NB left/thru   thru	F	>80.0	>1.00	~438	#804
Newport NB right	C	24.9	0.17	34	103
Newport SB left/thru   thru/right	E	57.8	0.98	180	#447
<b>Hancock Street/Furnace Brook Parkway</b>	<b>E</b>	<b>61.4</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	E	80.0	>1.00	164	#484
Furnace Brook WB left/thru/right	C	30.7	0.75	136	#367
Hancock NB left	C	24.3	0.39	23	82
Hancock NB thru/right	C	32.2	0.78	159	#423
Hancock SB left/thru	C	28.6	0.71	143	#389
Hancock SB right	F	>80.0	>1.00	64	#246
<b>Burgin Parkway/Newport Avenue/Adams Street</b>	<b>E</b>	<b>61.4</b>	<b>—</b>	<b>—</b>	<b>—</b>
Adams EB left	C	33.0	0.61	24	#105
Adams EB thru/right	D	35.1	0.82	168	#419
Adams WB left/thru	D	44.0	0.89	179	#452
Adams WB right	C	22.1	0.34	34	122
Burgin NB left/thru   thru/right	E	67.3	>1.00	219	#490
Newport SB left/thru   thru/right	C	24.0	0.82	108	#321
<b>Hancock Street/Huntley Road</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Huntley WB left/right	D	29.3	0.45	—	54
Hancock NB thru   thru/right	A	0.0	0.40	—	0
Hancock SB left/thru   thru	A	0.2	0.33	—	1
<b>Southern Artery/Sea Street/Coddington Street</b>	<b>D</b>	<b>38.5</b>	<b>—</b>	<b>—</b>	<b>—</b>
Southern EB left*	F	>80.0	>1.00	~73	#175
Southern EB thru/right	D	38.3	0.68	188	275
Southern WB left/thru   thru	D	53.6	0.97	229	337
Southern WB right   right	C	25.6	0.43	36	250
Coddington NB left/thru   thru/right	C	30.3	0.75	125	143
Sea SB left   left	C	31.1	0.74	247	#604
Sea SB thru	C	30.0	0.66	220	#620
Sea SB right	C	23.9	0.27	60	#217
<b>Washington Street/Foster Street</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB thru/right	A	0.0	0.15	—	0
Washington WB left/thru	A	1.1	0.04	—	3
Foster NB left/right	C	18.1	0.17	—	15
<b>Washington Street/McGrath Highway</b>	<b>C</b>	<b>34.3</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB left/thru   thru/right	B	19.4	0.20	64	122
Washington WB left/thru   thru/right	C	29.6	0.76	315	#523
McGrath NB left	C	29.7	0.30	28	45
McGrath NB thru   thru/right	D	42.0	0.71	203	246
McGrath SB left	D	42.5	0.54	85	160
McGrath SB thru   thru	D	40.0	0.54	153	232

**Existing Conditions (2012) Capacity Analysis Summary, AM Peak Hour (cont.)**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Elm Street</b>	—	—	—	—	—
Washington EB thru/right	A	0.0	0.28	—	0
Washington WB left/thru	A	3.5	0.14	—	13
Elm NB left/right	F	>50.0	>1.00	—	191
Elm SB left/thru/right	F	>50.0	0.22	—	19
<b>Mayor Hannon Parkway/Dennis Ryan Parkway/Miller Stile Road</b>	D	39.4	—	—	—
Dennis Ryan EB left	C	26.9	0.25	46	85
Dennis Ryan EB thru/right	C	24.9	0.10	25	57
Miller Stile WB left/thru/right	C	31.5	0.48	193	m283
Mayor Hannon NB left/thru   thru/right	C	29.1	0.57	99	192
Mayor Hannon SB left/thru   thru/right	D	53.3	0.54	251	323
<b>Elm Street/Miller Stile Road</b>	—	—	—	—	—
Elm EB left/thru	A	6.7	0.22	—	21
Elm WB thru/right	A	0.0	0.15	—	0
Miller Stile SB left/right	B	13.3	0.17	—	15
<b>Hancock Street/Mayor Hannon Parkway</b>	C	29.0	—	—	—
Mayor Hannon EB thru   thru/right	C	20.1	0.24	27	82
Mayor Hannon WB thru   thru/right	C	27.1	0.40	87	170
Hancock NB left/thru/right	D	44.0	0.91	306	#558
Hancock SB left/thru	A	7.0	0.39	9	60
Hancock SB right	A	1.1	0.02	0	m0
<b>Hancock Street/Quincy Avenue/School Street/Elm Street</b>	D	44.7	—	—	—
School EB left	C	25.2	0.32	36	91
School EB thru/right	D	42.0	0.65	181	#426
Elm WB left	C	29.5	0.27	50	109
Elm WB thru	D	49.5	0.65	234	#463
Quincy NB left	C	34.0	0.68	129	190
Quincy NB thru/right	E	63.0	0.96	420	#599
Hancock SB left/thru	C	24.4	0.71	136	#234
Hancock SB right	B	14.9	0.15	36	58
<b>Burgin Parkway/Granite Street</b>	D	35.7	—	—	—
Granite EB left	D	53.4	0.79	136	#340
Granite EB thru   thru	D	38.5	0.50	85	162
Granite EB right	C	34.9	0.03	0	38
Granite WB left	D	48.6	0.72	118	#297
Granite WB left/thru   thru	D	45.8	0.76	123	#254
Granite WB right	D	39.6	0.52	72	184
Burgin NB thru   thru	D	39.5	0.89	308	#622
Burgin NB right	B	12.2	0.41	96	258
Burgin SB left	D	36.3	0.72	38	#144
Burgin SB thru	C	26.6	0.76	301	#658
Burgin SB right	B	16.3	0.17	43	109
<b>Granite Street/School Street/Quarry Street</b>	—	—	—	—	—
Quarry EB thru	A	0.0	0.20	—	0
Quarry EB right	A	0.0	0.12	—	0
Granite WB thru	A	0.0	0.14	—	0
School NWB left	F	67.6	0.98	—	313

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### Existing Conditions (2012) Capacity Analysis Summary, AM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Maple Street</b>	—	—	—	—	—
Washington EB thru	A	0.0	0.12	—	0
Washington WB thru	A	0.0	0.42	—	0
Maple NB left/right	C	17.1	0.25	—	25
<b>Granite Street/Whitwell Street</b>	<b>B</b>	<b>15.5</b>	—	—	—
Whitwell EB left/thru	C	20.9	0.58	44	#148
Whitwell EB right	B	16.4	0.14	6	49
TJ Maxx WB left/thru/right	B	16.3	0.12	9	31
Granite NB left	C	21.2	0.80	54	#176
Granite NB thru   thru/right	A	8.8	0.29	28	77
Granite SB left/thru   thru	B	14.7	0.32	30	76
Granite SB right	B	13.3	0.03	0	24

# = 95th percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for the 95<sup>th</sup> percentile queue is metered by the upstream signal.

~ = The approach is above capacity for the 50th percentile traffic and the queue length could be much longer.

\*Defacto left-turn lane

With existing volumes and existing geometry, during the AM peak hour, two of the study area intersections operate at an overall LOS F. Although other intersections operate at an acceptable overall LOS, various approaches operate at LOS F; specifically:

#### **Hancock Street/Dimmock Street/Adams Street/Johnson Avenue**

The intersection of Hancock Street/Dimmock Street/Adams Street/Johnson Avenue operates at an overall LOS F. The Dimmock Street eastbound shared left-turn/through lane operates at LOS F. The delay is mainly attributed to the high volume of vehicles entering and clearing the intersection within the allotted green time.

The Hancock Street northbound bear left-turn lane operates at LOS F. The delay is mainly attributed to the high volume of vehicles entering and clearing the intersection within the allotted green time.

The Hancock Street southbound approach, the Adams Street south-eastbound approach, and the Johnson Avenue south-westbound approach operate at LOS F. The delay is mainly attributed to the volume of vehicles entering and clearing the intersection within the allotted green time.

#### **Newport Avenue/Furnace Brook Parkway**

The intersection of Newport Avenue/Furnace Brook Parkway operates at an overall LOS F. The Furnace Brook Parkway westbound approach operates at a LOS F. The delay is mainly attributed to the high volume of left-turning vehicles waiting for a gap in the opposing traffic; and the high volume of vehicles entering and clearing the intersection within the allotted green time.

The Newport Avenue northbound shared left-turn/through and through lane operate at LOS F. The delay is mainly attributed to the high volume vehicles entering and clearing the intersection within the allotted green time.

***Hancock Street/Furnace Brook Parkway***

The intersection of Newport Avenue/Furnace Brook Parkway operates at an overall LOS E; however, the Hancock Street southbound exclusive right-turn lane operates at a LOS F. The delay is mainly attributed to the high volume of vehicles entering and clearing the intersection within the allotted green time.

***Southern Artery/Sea Street / Coddington Street***

The intersection of Southern Artery/Sea Street/Coddington Street operates at an overall LOS D; however the Southern Artery eastbound left-turn lane operates at LOS F. The delay is mainly attributed to the volume of left-turning vehicles waiting for a gap in the opposing traffic; and the high volume of vehicles entering and clearing the intersection within the allotted green time.

***Washington Street / Elm Street***

The Elm Street northbound and southbound approach lanes operate at a LOS F, typical for a stop-controlled minor street intersecting a major arterial roadway. The delay is mainly attributed to vehicles exiting Elm Street waiting for a gap to turn onto Washington Street.



## Functional Design Report

Adams Green Transportation Improvements

**Table 4. Existing Conditions (2012) Capacity Analysis Summary, PM Peak Hour**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Primary Study Area</b>					
<b>Burgin Parkway/Dimmock Street</b>	<b>B</b>	<b>11.2</b>	<b>—</b>	<b>—</b>	<b>—</b>
Dimmock EB left/thru/right	C	20.2	0.14	11	39
Dimmock WB left	C	28.0	0.65	52	#157
Dimmock WB thru/right	C	20.6	0.19	18	61
Burgin NB left/thru   thru	A	8.6	0.42	56	193
Burgin NB right	A	7.3	0.19	0	43
Burgin SB left/thru   thru/right	B	10.2	0.57	88	295
<b>Hancock Street/Dimmock Street/Adams Street/Johnson Avenue</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Dimmock EB left/thru	D	43.9	0.76	65	#212
Dimmock EB right	C	22.9	0.55	64	156
Whitney WB left/thru/right	C	26.1	0.16	16	58
Hancock NB left	C	26.1	0.57	44	#153
Hancock NB bear left	F	>80.0	>1.00	216	#677
Hancock NB thru/right	A	9.7	0.38	52	226
Hancock SB left/thru   thru/right	F	>80.0	>1.00	132	#364
Adams SEB left/bear right	F	>80.0	>1.00	~254	#542
Adams SEB bear right/right	F	>80.0	>1.00	~255	#555
Johnson SWB left/right	F	>80.0	>1.00	5	7
<b>Hancock Street/Washington Street</b>	<b>B</b>	<b>11.4</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington WB left   left	D	43.3	0.72	130	179
Washington WB right   right	A	2.9	0.49	0	196
Hancock SB thru   thru	A	7.3	0.56	155	252
<b>Washington Street/Temple Street/Coddington Street</b>	<b>C</b>	<b>24.6</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington WB thru   thru/right	C	28.5	0.62	152	#242
Temple NB left   left	C	34.3	0.72	106	180
Temple NB thru	C	20.9	0.65	282	259
Temple NB right	A	0.7	0.34	0	67
Coddington SB right   right	C	34.9	0.71	182	204
<b>Hancock Street/Temple Street</b>	<b>B</b>	<b>10.9</b>	<b>—</b>	<b>—</b>	<b>—</b>
Hancock NB right   right	A	9.3	0.49	109	280
Hancock SB left   left	C	33.2	0.71	157	198
Hancock SB thru   thru	A	2.0	0.44	72	72
<b>Maple Street/Chestnut Street &amp; Hancock Street/Granite Street</b>	<b>C</b>	<b>24.6</b>	<b>—</b>	<b>—</b>	<b>—</b>
Granite EB left	D	39.0	0.74	192	285
Granite EB left/thru	D	40.8	0.76	194	292
Granite EB right	C	29.4	0.36	73	125
Hancock NB left	C	25.7	0.33	49	m78
Hancock NB thru/right	C	28.6	0.51	147	m229
Hancock SB left	C	20.9	0.53	46	140
Hancock SB thru	C	28.4	0.59	146	#342
Hancock SB right	B	12.0	0.59	331	322
Chestnut NWB right	A	0.4	0.19	0	0

**Existing Conditions (2012) Capacity Analysis Summary, PM Peak Hour (cont.)**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Extended Study Area</b>					
<b>Newport Avenue/Furnace Brook Parkway</b>	<b>D</b>	<b>44.1</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	F	>80.0	>1.00	~387	#574
Furnace Brook WB left/thru/right	C	31.8	0.71	261	383
Newport NB left/thru   thru	D	37.6	0.85	248	#357
Newport NB right	C	22.5	0.22	46	100
Newport SB left/thru   thru/right	D	35.4	0.92	339	#460
<b>Hancock Street/Furnace Brook Parkway</b>	<b>E</b>	<b>56.1</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	F	>80.0	>1.00	~189	#573
Furnace Brook WB left/thru/right	C	25.8	0.61	103	205
Hancock NB left	B	19.6	0.18	7	35
Hancock NB thru/right	C	26.4	0.66	134	#356
Hancock SB left/thru	C	34.8	0.82	173	#472
Hancock SB right	F	>80.0	>1.00	93	#298
<b>Burgin Parkway/Newport Avenue/Adams Street</b>	<b>E</b>	<b>65.4</b>	<b>—</b>	<b>—</b>	<b>—</b>
Adams EB left	C	22.0	0.23	13	48
Adams EB thru/right	C	29.3	0.71	133	#327
Adams WB left/thru	C	28.1	0.68	128	#312
Adams WB right	C	21.7	0.24	17	87
Burgin NB left/thru   thru/right	D	40.4	0.91	159	#371
Newport SB left/thru   thru/right	F	>80.0	>1.00	~255	#674
<b>Hancock Street/Huntley Road</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Huntley WB left/right	D	29.0	0.07	—	6
Hancock NB thru   thru/right	A	0.0	0.40	—	0
Hancock SB left/thru   thru	A	0.3	0.51	—	1
<b>Southern Artery/Sea Street/Coddington Street</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Southern EB left/thru   thru/right	F	>80.0	>1.00	~455	#577
Southern WB left/thru   thru	F	>80.0	>1.00	~207	#310
Southern WB right   right	D	48.7	0.35	57	134
Coddington NB left/thru   thru/right	C	30.4	0.66	162	#283
Sea SB left   left	C	28.5	0.80	251	#426
Sea SB thru	B	19.7	0.29	73	146
Sea SB right	B	17.8	0.05	0	30
<b>Washington Street/Foster Street</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB thru/right	A	0.0	0.36	—	0
Washington WB left/thru	A	1.2	0.04	—	3
Foster NB left/right	D	26.4	0.37	—	41
<b>Washington Street/McGrath Highway</b>	<b>E</b>	<b>62.7</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB left/thru   thru/right	C	27.2	0.60	163	#416
Washington WB left/thru   thru/right	C	30.5	0.71	193	#409
McGrath NB left	D	40.6	0.38	28	m55
McGrath NB thru   thru/right	F	>80.0	>1.00	271	#454
McGrath SB left	E	56.4	0.78	146	181
McGrath SB thru   thru	D	37.6	0.52	174	185

## Functional Design Report

Adams Green Transportation Improvements

### Existing Conditions (2012) Capacity Analysis Summary, PM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Elm Street</b>	—	—	—	—	—
Washington EB thru/right	A	0.0	0.50	—	0
Washington WB left/thru	A	3.7	0.14	—	12
Elm NB left/right	F	>50.0	>1.00	—	411
Elm SB left/thru/right	F	>50.0	0.30	—	28
<b>Mayor Hannon Parkway/Dennis Ryan Parkway/Miller Stile Road</b>	<b>C</b>	<b>31.6</b>	<b>—</b>	<b>—</b>	<b>—</b>
Dennis Ryan EB left	C	27.4	0.33	71	#244
Dennis Ryan EB thru/right	C	28.9	0.44	126	#416
Miller Stile WB left/thru/right	C	28.4	0.21	50	m121
Mayor Hannon NB left/thru   thru/right	D	41.4	0.86	294	278
Mayor Hannon SB left/thru   thru/right	C	20.8	0.65	90	62
<b>Elm Street/Miller Stile Road</b>	—	—	—	—	—
Elm EB left/thru	A	3.3	0.08	—	7
Elm WB thru/right	A	0.0	0.14	—	0
Miller Stile SB left/right	C	15.0	0.49	—	67
<b>Hancock Street/Mayor Hannon Parkway</b>	<b>C</b>	<b>30.7</b>	<b>—</b>	<b>—</b>	<b>—</b>
Mayor Hannon EB thru   thru/right	B	14.9	0.42	45	141
Mayor Hannon WB thru   thru/right	C	21.3	0.32	78	156
Hancock NB left/thru/right	D	42.7	0.87	225	#450
Hancock SB left/thru	D	43.1	0.65	237	380
Hancock SB right	D	51.3	0.06	10	m48
<b>Hancock Street/Quincy Avenue/School Street/Elm Street</b>	<b>D</b>	<b>37.4</b>	<b>—</b>	<b>—</b>	<b>—</b>
School EB left	C	22.3	0.28	43	108
School EB thru/right	E	55.3	0.87	296	#668
Elm WB left	B	17.6	0.46	37	95
Elm WB thru	C	24.7	0.40	109	207
Quincy NB left	D	47.0	0.78	84	#158
Quincy NB thru/right	D	35.7	0.69	252	369
Hancock SB left/thru	D	43.1	0.96	287	#474
Hancock SB right	A	6.7	0.30	35	m40
<b>Burgin Parkway/Granite Street</b>	<b>D</b>	<b>37.9</b>	<b>—</b>	<b>—</b>	<b>—</b>
Granite EB left	D	42.2	0.54	72	170
Granite EB thru   thru	D	44.6	0.69	98	191
Granite EB right	D	37.2	0.05	2	46
Granite WB left	D	49.1	0.70	94	#234
Granite WB left/thru   thru	D	45.3	0.71	95	188
Granite WB right	D	38.2	0.26	30	99
Burgin NB thru   thru	C	28.4	0.67	178	372
Burgin NB right	B	12.5	0.37	80	237
Burgin SB left	D	41.8	0.82	61	#261
Burgin SB thru	D	51.9	0.98	419	#1062
Burgin SB right	B	16.8	0.28	68	190
<b>Granite Street/School Street/Quarry Street</b>	—	—	—	—	—
Quarry EB thru	A	0.0	0.21	—	0
Quarry EB right	A	0.0	0.21	—	0
Granite WB thru	A	0.0	0.22	—	0
School NWB left	D	26.9	0.57	—	86

**Existing Conditions (2012) Capacity Analysis Summary, PM Peak Hour (cont.)**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Maple Street</b>	—	—	—	—	—
Washington EB thru	A	0.0	0.30	—	0
Washington WB thru	A	0.0	0.30	—	0
Maple NB left/right	E	35.5	0.64	—	103
<b>Granite Street/Whitwell Street</b>	<b>B</b>	<b>14.7</b>	—	—	—
Whitwell EB left/thru	C	24.8	0.68	52	#190
Whitwell EB right	B	16.9	0.21	12	67
Granite NB left	B	16.3	0.11	7	48
TJ Maxx WB left/thru/right	B	11.8	0.53	30	107
Granite NB thru   thru/right	A	8.3	0.20	19	61
Granite SB left/thru   thru	B	15.2	0.40	42	93
Granite SB right	B	13.2	0.03	0	19

# = 50<sup>th</sup>/95<sup>th</sup> percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for the 95<sup>th</sup> percentile queue is metered by the upstream signal.

~ = The approach is above capacity for the 50th percentile traffic and the queue length could be much longer.

With existing volumes and existing geometry, during the PM peak hour, two of the study area intersections operate at an overall LOS F. Although other intersections operate at an acceptable overall LOS, various approaches operate at LOS F; specifically:

**Hancock Street/Dimmock Street/Adams Street/Johnson Avenue**

The intersection of Hancock Street/Dimmock Street/Adams Street/Johnson Avenue operates at an overall LOS F. The Hancock Street northbound bear left-turn lane operates at LOS F. The delay is mainly attributed to the high volume of vehicles entering and clearing the intersection within the allotted green time.

The Hancock Street southbound approach, the Adams Street south-eastbound approach, and the Johnson Avenue south-westbound approach operate at LOS F. The delay is mainly attributed to the volume of vehicles entering and clearing the intersection within the allotted green time.

**Newport Avenue/Furnace Brook Parkway**

The intersection of Newport Avenue/Furnace Brook Parkway operates at an overall LOS D. The Furnace Brook Parkway eastbound approach operates at a LOS F. The delay is mainly attributed to the high volume of left-turning vehicles waiting for a gap in the opposing traffic; and the high volume of vehicles entering and clearing the intersection within the allotted green time.

**Hancock Street/Furnace Brook Parkway**

The intersection of Newport Avenue/Furnace Brook Parkway operates at an overall LOS E; however, the Furnace Brook Parkway eastbound approach operates at a LOS F. The delay is mainly attributed to the high volume of left-turning vehicles waiting for a gap in the opposing traffic; and the high volume of vehicles entering and clearing the intersection within the allotted green time.

The Hancock Street southbound exclusive right-turn lane operates at a LOS F. The delay is mainly attributed to the high volume of vehicles entering and clearing the intersection within the allotted green time.

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## Functional Design Report

### Adams Green Transportation Improvements

#### ***Burgin Parkway/Newport Avenue / Adams Street***

The intersection of Burgin Parkway/Newport Avenue/Adams Street operates at an overall LOS E; however, the Newport Avenue southbound approach operates at LOS F. The delay is mainly attributed to the high volume of vehicles entering and clearing the intersection within the allotted green time.

#### ***Southern Artery/Sea Street / Coddington Street***

The intersection of Southern Artery/Sea Street/Coddington Street operates at an overall LOS F. The Southern Artery eastbound approach and the Southern Artery westbound shared left/through and through lane operate at LOS F. The delay is mainly attributed to the high volume of vehicles entering and clearing the intersection within the allotted green time.

#### ***Washington Street/McGrath Highway***

The intersection of Washington Street/McGrath Highway operates at an overall LOS E; however, the McGrath Highway northbound through lane and shared through/right-turn lane operate at LOS F. The delay is mainly attributed to the high volume of vehicles entering and clearing the intersection within the allotted green time.

#### ***Washington Street / Elm Street***

The Elm Street northbound and southbound approach lanes operate at a LOS F, typical for a stop-controlled minor street intersecting a major arterial roadway. The delay is mainly attributed to vehicles exiting Elm Street waiting for a gap to turn onto Washington Street.



## Safety Analysis

The study team performed a safety analysis at the study area intersections to identify and evaluate possible safety issues that exist. Crash data for this location were obtained from MassDOT for the most recent 3-year period available (2007–09). During that period, 184 vehicular accidents were reported at the primary study area intersections. Within the 184 reported collisions, 14 crashes involved a pedestrian, and 2 collisions involved a cyclist. The majority of bicycle and pedestrian crashes occurred along Hancock Street, of which 4 of these crashes occurred after dusk. **Table 5** summarizes the crashes at the 7 primary study area intersections.

**Table 5. MassDOT Crash Data Summary – Primary Study Area**

Scenario	# of Crashes						
	Burgin/ Dimmock	Hancock/ Dimmock/ Adams/ Johnson	Hancock/ Washington	Washington/ Temple/ Coddington	Hancock/ Temple	Maple/ Chestnut/ Hancock	Hancock/ Granite
<b>Year</b>							
2007	8	18	10	14	4	3	11
2008	2	2	20	14	10	1	10
2009	8	7	15	9	6	1	11
<b>Type</b>							
Single vehicle	2	1	11	5	3	0	8
Angle	11	7	8	11	3	1	9
Rear-end	4	12	13	7	8	1	8
Head-on	1	1	1	0	0	0	0
Sideswipe	0	3	9	12	6	2	4
Unknown/other	0	3	3	2	0	1	3
<b>Severity</b>							
Property damage only	12	21	34	28	16	4	25
Personal injury	6	3	8	6	2	0	7
Fatality	0	0	0	0	0	0	0
Hit-and-run	0	0	0	0	0	0	0
Unknown	0	3	3	3	2	1	0
<b>Total</b>	<b>18</b>	<b>27</b>	<b>45</b>	<b>37</b>	<b>20</b>	<b>5</b>	<b>32</b>
<b>Crash Rate</b>	<b>0.65</b>	<b>0.75</b>	<b>1.31</b>	<b>1.18</b>	<b>0.62</b>	<b>0.17</b>	<b>1.17</b>
District 6 Average	0.77	0.77	0.77	0.77	0.77	0.57	0.77

Crash rates are determined based on the number of crashes per million vehicles entering the intersection. The average crash rates for Hancock Street/Washington Street, Washington Street/Temple Street/Coddington Street, and Hancock Street/Granite Street are above the MassDOT District 6 average for signalized intersections of 0.77 crashes per million entering vehicles (MEV). Hancock Street/Dimmock Street/Adams Street/Johnson Avenue is just under the district average. Of the 7 primary study area intersections, Hancock Street/Temple Street is #153 in MassDOT's 2009 Top Crash Locations Report. In addition, Southern Artery/Sea Street/Coddington Street and Burgin Parkway/Granite Street are also on the 2009 Top Crash Locations list as #71 and #82, respectively.

50 of the 184 crashes were reported to be angle crashes; another 50 were reported to be rear-end crashes. A possible cause of these types of crashes at signalized intersections is insufficient clearance time or poor visibility of vehicle indications. The design team considered contributing factors such as insufficient clearance times and insufficient visibility when recommending improvements. Crash rate worksheets and collision diagrams are provided in **Appendix C**.

## Pedestrians and Bicycles

Quincy Center is in MassDOT's 2009 Top Crash Locations Report and ranked #8 on the list of top pedestrian crash clusters from 2002-2009.

### Sidewalk Conditions

Within the project area, the sidewalks are generally in good condition. Sidewalks are constructed of cement concrete with a 1-foot brick accent strip along the curb. The width of the sidewalk varies depending on location. **Table 6** shows the existing roadway width as well as the sidewalk widths.

**Table 6. Existing Roadway Cross-sections**

Street	Limits		Typical Cross Section	Typical Width of Roadway (feet)	Constrained Width of Sidewalk (feet)
Chestnut Street	Maple Street	150' East	T T/P	32	5
Coddington Street	Spears Street	Temple Street	P/T T/P	44	6
Granite Street	Hancock Street	Thomas E. Burgin Pkwy	T/T/T M T/T/T	73	5
Hancock Street	Dimmock Street	Washington Street	P/T/T T/T/P	62	7
Hancock Street	Washington Street	Temple Street	P/T/T/T/T/P	64	7
Hancock Street	Chestnut Street	Temple Street	T/T/P	48	6
Hancock Street	Granite Street	300' South	P/T T/P	45	6
Temple Street	Washington Street	Hancock Street	T/T/T/T	46	3
Washington Street	Hancock Street	Temple Street	P/T/T/T/T/P	64	5
Washington Street	Temple Street	Maple Street	P/T/T T/P	52	7

Note: T = Travel Lane, P = Parking, M = Raised Median

As shown in the table, throughout the project limits, sidewalks are narrow. Bicycle accommodations are not provided within the project area.

### Pedestrian/Bicycle Desire Lines

Pedestrian and bicycle observations were conducted throughout the project area on the following days:

- 7:30-8:30 AM on Tuesday, January 3, 2012;
- 4:45-5:45 PM on Monday, March 12, 2012; and,
- 7:30-8:30 AM on Tuesday, March 13, 2012.

Observations confirmed that the Quincy Center MBTA station, the Harvard Vanguard Building, City Hall, Thomas Crane Public Library, and local businesses are among the major pedestrian and bicycle trip generators within the project limits.

Other key observations were:

- Majority of bicyclists were observed riding on the sidewalk and weaving between pedestrians at unsafe speeds;
- Bicyclists were observed biking along the paved path from Hancock Street to the Quincy Center MBTA Station;

- Bicyclists were observed biking along the paved path behind the cemetery;
- Most pedestrians exiting the Quincy Center MBTA station crossed Hancock Street into the median and headed southeast along Washington Street or entered the Harvard Vanguard building;
- Pedestrians traveling from the east were observed to remain on the library (east) side of Washington Street and cross Coddington Street and continue towards the Harvard Vanguard building;
- Typically pedestrians were observed to utilize crosswalks within the study area; and
- Pedestrians exiting the parking garage at Parking Way crossed Granite Street midblock by jaywalking and utilizing the median.

### Bicycle Parking Facilities

Quincy's Department of Planning and Community Development prepared a *Bicycle Parking Plan* in April 2008. The purpose of the study was to:

- Raise awareness of the benefits of bicycling in Quincy;
- Raise awareness of the current lack of acceptable bicycle parking;
- Recommend locations for the provision of bicycle racks around Quincy; and,
- Explain how the City can acquire bicycle racks through the Boston region MPO/MAPC Bike Parking Program.

The plan compiled the locations and types of existing racks, and provided recommendations for the preferred types, locations, and placement guidelines. Within the project limits, the plan recommended additional bicycle racks shall be installed at City Hall, Thomas Crane Library, and Ross Garage.

For the Adams Green project, a bicycle parking inventory was collected on Tuesday, January 3, 2012 within the project limits and included observations at parking garages, the MBTA station, and municipal buildings. Below is a breakdown of the number of existing racks within the study area:

- 1 slotted rack with capacity for about 6-8 bicycles are located at the entrance to the Thomas Crane Public Library;
- 2 hanger style racks with capacity for about 8-10 bicycles are located at the Quincy Center MBTA Station entrance;
- 10 U-style racks are located at the parking lot and Quincy Center MBTA Station bus loop;
- 6 post and ring racks are located at the northeast corner of City Hall; and,
- 2 post and ring racks are located at the Bank of America Building between Chestnut Street and Hancock Street.

Currently, there are about 50 bicycle parking spaces within the project limits. This does not include other street furniture such as sign posts and fences. Observations determined that street furniture is currently being used for bicycle parking.

## Parking Analysis

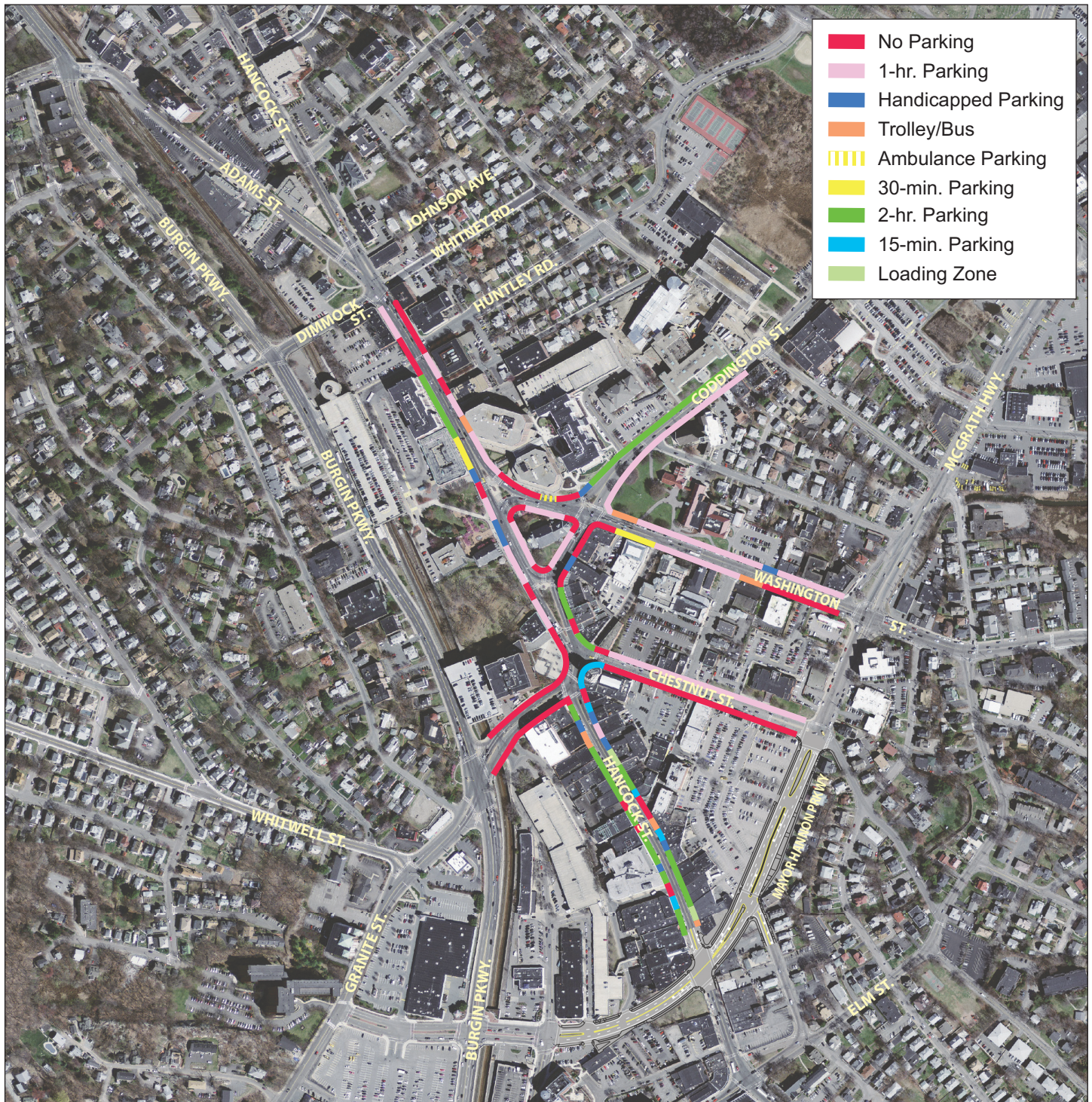
### On-street Parking

Within the Quincy Center area, short-term on-street parking is provided along both sides of Hancock Street, Washington Street, and Coddington Street. On-street parking is also provided along the east side of Chestnut Street. These short-term, on-street parking spaces are in high demand, especially in front of City Hall. On-street parking regulations for the study area are shown in **Figure 12**.

Parking turnover data for the on-street parking was collected on Thursday, December 8, 2011, from 8 AM to 6 PM in 15-minute intervals and on Saturday, December 10, 2011, from 9 AM to 6 PM in 30-minute intervals. On-street parking within Quincy Center was separated into the zones (**Figure 13**). There are a total of 291 on-street parking spaces within the study area with varying restrictions and time limits: handicap, 15-minute, 30-minute, 1-hour, and 2-hour.

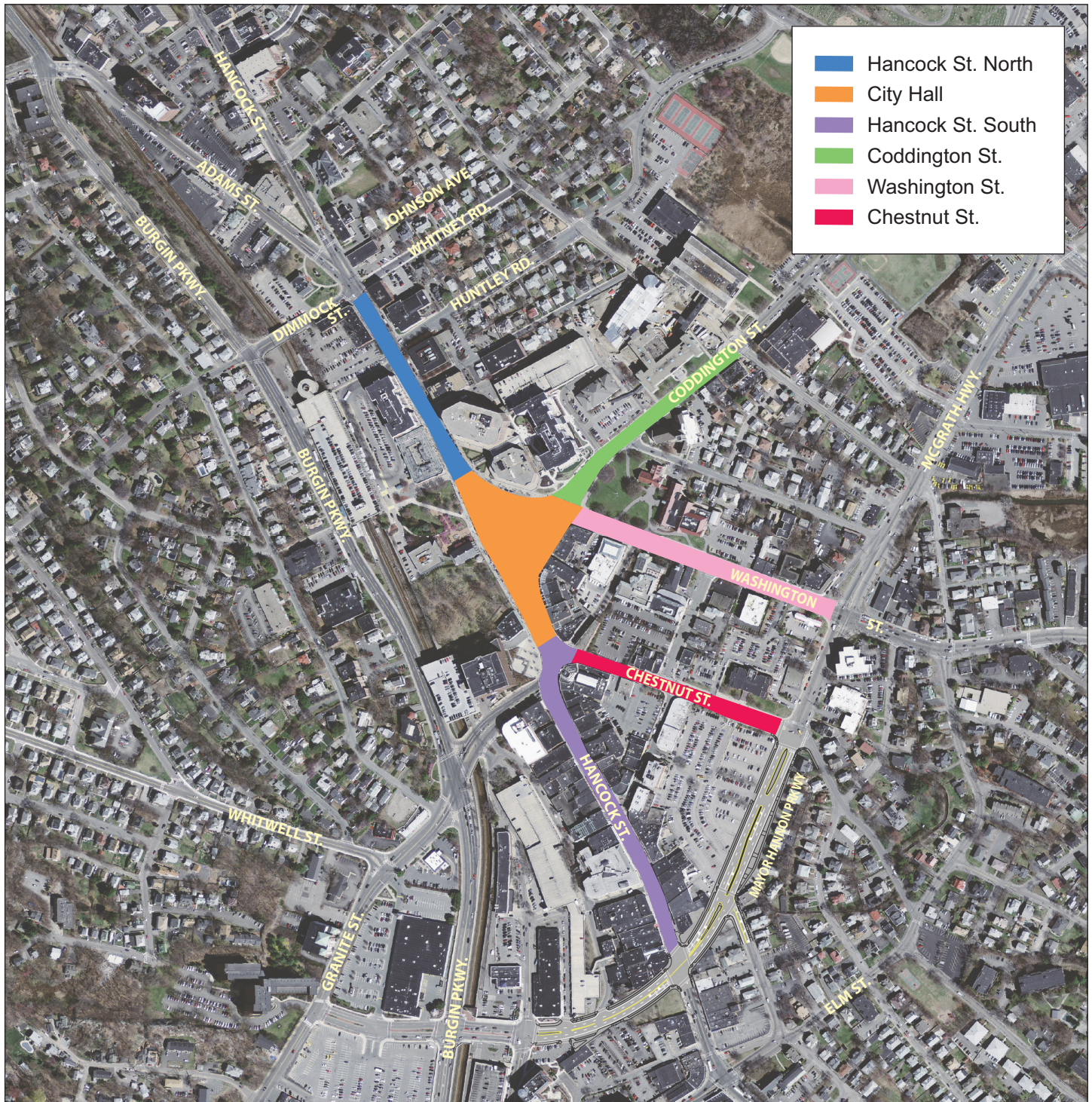


**Figure 12. Existing On-street Parking in the Study Area**





**Figure 13. On-street Parking Zones**





**Table 7** shows the average weekday and Saturday occupancy for each of the on-street parking zones. The table also shows the average parking duration by on-street regulation.

**Table 7. Existing On-Street Parking Occupancy**

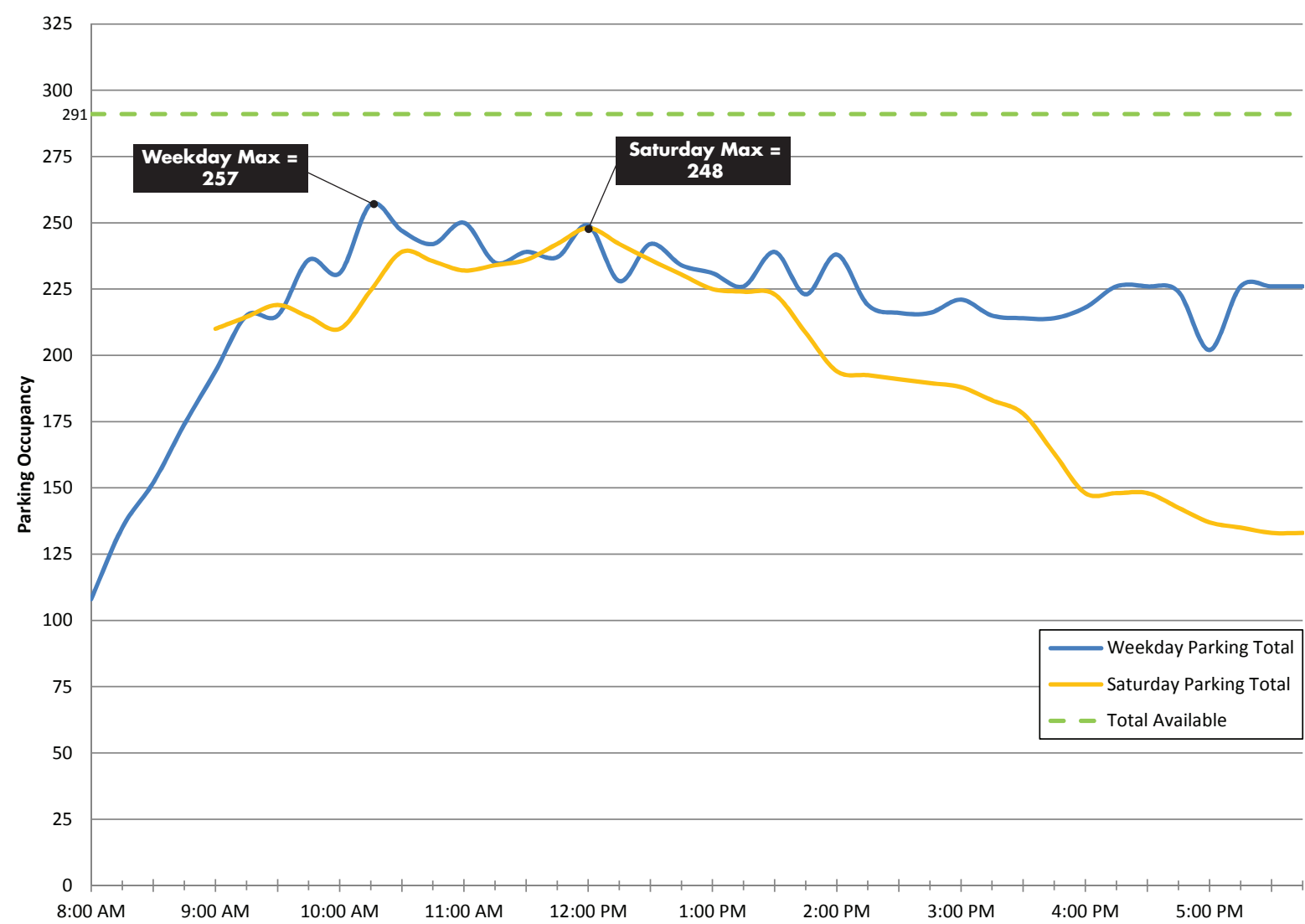
Zone	Regulation	# Spaces	Average Weekday Occupancy	Average Weekday Duration	Average Saturday Occupancy	Average Saturday Duration
Hancock Street North	Handicap	1	100%	1.6 hrs.	100%	8.0 hrs.
	30-min	4	100%	2.2 hrs.	75%	1.3 hrs.
	1-hour	19	84%	1.9 hrs.	84%	2.1 hrs.
	2-hour	14	93%	1.9 hrs.	86%	2.1 hrs.
	<b>Total</b>	<b>38</b>	<b>89%</b>		<b>82%</b>	
City Hall	Handicap	4	100%	4.8 hrs.	75%	5.9 hrs.
	1-hour	41	78%	2.1 hrs.	54%	1.9 hrs.
	2-hour	5	100%	3.1 hrs.	100%	2.0 hrs.
	<b>Total</b>	<b>50</b>	<b>89%</b>		<b>65%</b>	
Hancock Street South	Handicap	5	60%	1.3 hrs.	60%	2.3 hrs.
	15-min	15	67%	51 min.	73%	2.0 hrs.
	1-hour	5	80%	2.1 hrs.	80%	1.1 hrs.
	2-hour	49	90%	2.2 hrs.	96%	2.1 hrs.
	<b>Total</b>	<b>74</b>	<b>82%</b>		<b>88%</b>	
Coddington Street	Handicap	1	100%	2.0 hrs.	0%	2.5 hrs.
	1-hour	26	50%	1.3 hrs.	46%	2.4 hrs.
	2-hour	27	52%	1.6 hrs.	52%	3.0 hrs.
	<b>Total</b>	<b>54</b>	<b>52%</b>		<b>48%</b>	
Washington Street	Handicap	2	50%	1.6 hrs.	0%	0.5 hrs.
	30-min	3	100%	0.5 hrs.	100%	0.8 hrs.
	1-hour	44	70%	2.1 hrs.	66%	2.1 hrs.
	<b>Total</b>	<b>49</b>	<b>71%</b>		<b>65%</b>	
Chestnut Street	1-hour	17	47%	1.6 hrs.	17%	1.1 hrs.
	2-hour	13	92%	1.7 hrs.	85%	1.3 hrs.
	<b>Total</b>	<b>30</b>	<b>67%</b>		<b>47%</b>	

As shown in the table, Hancock Street North and Hancock Street South have the highest occupancies with over 80% occupancy during the weekday and Saturday. The City Hall area has a lot of parking activity during the weekday; however, on Saturday when City Hall is closed, occupancy drops. Coddington Street, Washington Street, and Chestnut Street, on average seem to have plenty of on-street parking available.

Based on parking observations, over 50 vehicles within the study area parked for over 4 hours during the weekday. Twenty-four of those vehicles were parked for over 6 hours. On Saturday, over 65 vehicles were parked for over 4 hours. Thirty-three of those stayed over 6 hours. The average parking durations show that vehicles, in general, tend to stay 2 or more hours, even in parking spaces with shorter time limits. The 2-hour spaces also seem to fill up more than the 1-hour or less spaces. It was observed, on both the weekday and Saturday, that there was a lack of enforcement. Vehicles staying longer than the signed regulations were not issued parking tickets.

**Figure 14** shows the total occupancy for the Adams Green study area by time of day.

Figure 14. Total On-street Parking Occupancy



As shown in **Figure 14**, the on-street parking within the study area does not reach full occupancy during the weekday or Saturday. Out of the 291 on-street parking spaces available, the weekday has a max a 257 occupied (34 empty), while Saturday had 248 occupied (43 empty).

**Table 8** shows the parking turnover rates for each zone.

**Table 8. Existing On-Street Parking Turnover**

Zone	Parking Restriction	# Spaces Available	Average Turnover Rate (veh/hr/space)			
			Weekday Morning (8:00 AM to 10:00 AM)	Weekday Mid-day (10:00 AM to 4:00 PM)	Weekday Evening (4:00 PM to 6:00 PM)	Saturday Mid-day (10:00 AM to 2:00 PM)
Hancock Street North	Handicap	1	0.50	1.00	0.50	0.25
	30-min	4	1.38	0.88	1.38	1.19
	1-hour	19	1.11	1.16	1.16	0.79
	2-hour	14	1.07	0.99	0.86	1.00
	<b>TOTAL</b>	<b>38</b>	<b>1.11</b>	<b>1.06</b>	<b>1.05</b>	<b>0.89</b>
City Hall	Handicap	4	0.63	0.42	0.25	0.25
	1-hour	37	1.01	1.01	1.03	0.68
	2-hour	5	1.00	0.80	0.80	0.65
	<b>TOTAL</b>	<b>46</b>	<b>0.98</b>	<b>0.93</b>	<b>0.93</b>	<b>0.64</b>
Hancock Street South	Handicap	5	0.70	0.63	0.70	0.60
	15-min	15	0.60	1.43	1.23	0.93
	1-hour	5	0.80	1.17	1.20	1.10
	2-hour	49	0.87	1.00	1.03	1.01
	<b>TOTAL</b>	<b>74</b>	<b>0.80</b>	<b>1.07</b>	<b>1.06</b>	<b>0.97</b>
Coddington Street	Handicap	1	0.50	0.33	0.00	0.25
	1-hour	26	0.46	0.63	0.73	0.45
	2-hour	27	0.54	0.69	0.44	0.38
	<b>TOTAL</b>	<b>54</b>	<b>0.50</b>	<b>0.65</b>	<b>0.57</b>	<b>0.41</b>
Washington Street	Handicap	2	1.00	1.42	1.75	0.13
	30-min	3	3.00	2.61	1.83	1.58
	1-hour	44	0.61	0.83	0.74	0.94
	<b>TOTAL</b>	<b>49</b>	<b>0.78</b>	<b>0.96</b>	<b>0.85</b>	<b>0.95</b>
Chestnut Street	1-hour	17	0.56	0.66	0.68	0.25
	2-hour	13	0.88	0.85	0.81	0.94
	<b>TOTAL</b>	<b>30</b>	<b>0.70</b>	<b>0.74</b>	<b>0.73</b>	<b>0.55</b>

The rates shown in the table represent how often the vehicles parked in each zone change. Rates above 1.0 signify that vehicles tend to turnover more often once every hour. Rates below 1.0 show that vehicles tend to stay longer than 1 hour. As shown in the table, vehicles tend to turnover more quickly in Hancock Street North. This is likely due to the coffee shops in this area. Customers tend to spend a short amount of time in these places, and therefore park for a shorter amount of time. In all other zones, vehicles tend to turnover less than once an hour.

## **Off-street Parking**

### ***Ross Garage***

The Ross Garage is city-owned facility that is located south of Granite Street between Burgin Parkway and Hancock Street with access from Granite Street and Ross Way (via Mayor Hannon Parkway). Ross Garage, which is currently under construction, has approximately 720 parking spaces and 8 handicap spaces. The fee structure is as follows:

- 0-1 hrs. → Free
- 1-2 hrs. → \$1.50
- 2-3 hrs. → \$3.00
- 3-4 hrs. → \$4.00
- 4-5 hrs. → \$5.00
- 5-6 hrs. → \$6.00
- 6-7 hrs. → \$7.00
- All Day → \$8.00
- Weekend → Free

Parking occupancy was collected on Thursday, December 8, 2011, at 8:00AM, 12:00 PM, and 5:00 PM. Occupancy was also collected at 12:00 PM on Saturday, December 10, 2011. During the weekday, occupancy was highest during the mid-day with 301 vehicles (41% occupied). On Saturday, the garage was 31% occupied with 229 vehicles.

### ***Hancock Lot***

The Hancock Lot is also city-owned and located between Cottage Avenue and Mayor Hannon Parkway with access from Chestnut Street. The Hancock Lot has approximately 482 parking spaces and 11 handicap spaces. The fee structure for this lot is the same as Ross Garage. Parking occupancy was collected on Thursday, December 8, 2011, at 8:00 AM, 12:00 PM, and 5:00 PM. Occupancy was also collected at 12:00 PM on Saturday, December 10, 2011. During the weekday, peak occupancy was at 5:00 PM with 329 vehicles (67% occupied). On Saturday, the lot was 42% occupied with 209 vehicles.

### ***Quincy Center MBTA Garage***

The Quincy Center MBTA garage has 872 parking spaces, 16 of which are handicap accessible. According to the MBTA, this garage runs on average at 50% occupancy during the weekday. Parking fees are \$7 per day and \$8 for overnight parking.

### ***President's Place Garage***

President's Place Garage is located on Saville Avenue between President's Place Galleria and Quincy High School. The garage has a total of 1,110 parking spaces with the following fee structure:

- 0-1 hrs. → \$2.00
- 1-2 hrs. → \$3.00
- 2-3 hrs. → \$4.00
- 3-4 hrs. → \$5.00
- 4-5 hrs. → \$6.00
- 5-6 hrs. → \$7.00
- 6-7 hrs. → \$8.00
- 7-8 hrs. → \$9.00
- 8-9 hrs. → \$10.00
- All Day → \$11.00



## Public Transportation

As a part of the Metro-Boston area, the MBTA provides several public transportation options in the City of Quincy including the Quincy Center area. Quincy Center Station, which is adjacent to Quincy City Hall and located between Hancock Street and Burgin Parkway, provides commuter rail service and rapid transit service. The station is also a hub to several MBTA bus routes that service the City of Quincy.

### Commuter Rail

The MBTA offers 3 commuter rail lines that run through Quincy Center Station: the Old Colony Lines (Kingston/Plymouth and Middleborough/Lakeville) and the Greenbush Line. These trains provide access from Boston to the southern regions of Massachusetts. Weekend service has been suspended as of September 2011 on all of these lines due to construction on the tracks and is scheduled to resume in Spring 2012.

During the weekday, the Old Colony Lines have 7 inbound trains and 13 outbound trains that stop at Quincy Center Station. Inbound trains run between 6:38 AM and 10:14 PM. Outbound trains run between 6:49 AM to 10:44 PM.

The Greenbush Line has 10 inbound trains and 9 outbound trains that stop in Quincy during the weekday. Inbound trains run between 6:22AM and 9:07 PM. Outbound trains run between 9:39 AM to 10:14 PM.

### Rapid Transit

The MBTA's Red Line Subway has 2 branches that provide service from Alewife Station in Cambridge to Braintree Station in Braintree and from Alewife Station to Ashmont Station in Dorchester. Quincy Center Station is located on the Braintree branch with inbound and outbound service approximate every 9 to 12 minutes Monday through Friday and 14 to 16 minutes on Saturday and Sunday.

### Bus

With Quincy Center Station acting a public transportation hub in the City of Quincy, several MBTA bus routes begin at the station and branch out to provide access to: North Quincy, Squantum, Germantown, Boston, Hough's Neck, Hingham, Weymouth, Brockton, Braintree, Holbrook, and Randolph. **Figure 15** shows a map of the existing bus routes.



Figure 15. Existing Bus Routes





## Future Conditions

Future traffic volumes were estimated and analyzed to determine the number of travel lanes and lane usage required for the primary study area intersections and the impacts to the extended study area. Two conditions were examined:

- No-Build – Future traffic volumes with the existing geometry;
- Build – Future traffic volumes with the Hancock Street closure between Washington Street and Temple Street and geometric improvements.

These future conditions are discussed in the sections below.

### No-Build Conditions (2022)

#### Estimation of Base Year (2022) Traffic Volumes

Future volumes for the 2022 design year were established are generally established by increasing the existing volumes by a background growth rate consistent with historical growth trends and then adding traffic that will be generated by known planned developments in the area.

#### **General Background Growth**

Based on historical counts in Quincy provided by MassDOT, traffic volumes in the area have been decreasing at a rate of 2.8% per year for the past 10 years. Due to the decrease in traffic volumes and the acknowledgment of the New Quincy Center Redevelopment program, a minimal background growth rate of 0.5% per year was applied to the existing volumes to be conservative.

#### **Area Developments**

The *Quincy YMCA*, which is located on Coddington Street, is currently developing plans to update and expand their facility. This expansion is anticipated to be completed in Fall 2013.

The *New Quincy Center Redevelopment* is an ambitious master plan of mixed-use development proposed for downtown Quincy. The site is bounded by Temple Street in the north, Mayor Hannon Parkway in the south, Washington Street in the east, and Burgin Parkway in the west. **Table 9** shows a summary of the proposed development program as it compares to the existing land use.

**Table 9. New Quincy Center Redevelopment Land Use Summary**

Land Use	Existing	Proposed	Net
Retail	296,690 sf	462,564 sf	165,874 sf
Restaurant	3,789 seats	4,015 seats	226 seats
Movie Theater	21,170 sf	88,493 sf	67,323 sf
Office	652,476 sf	1,291,946 sf	639,470 sf
Health Club	—	33,710 sf	33,710 sf
Classroom	—	159,470 sf	159,470 sf
Hotel	—	173 rooms	173 rooms
Residential	—	1,882 units	1,882 units

Future 2022 no-build volumes with existing geometry are shown in **Figure 16** and **Figure 17**.

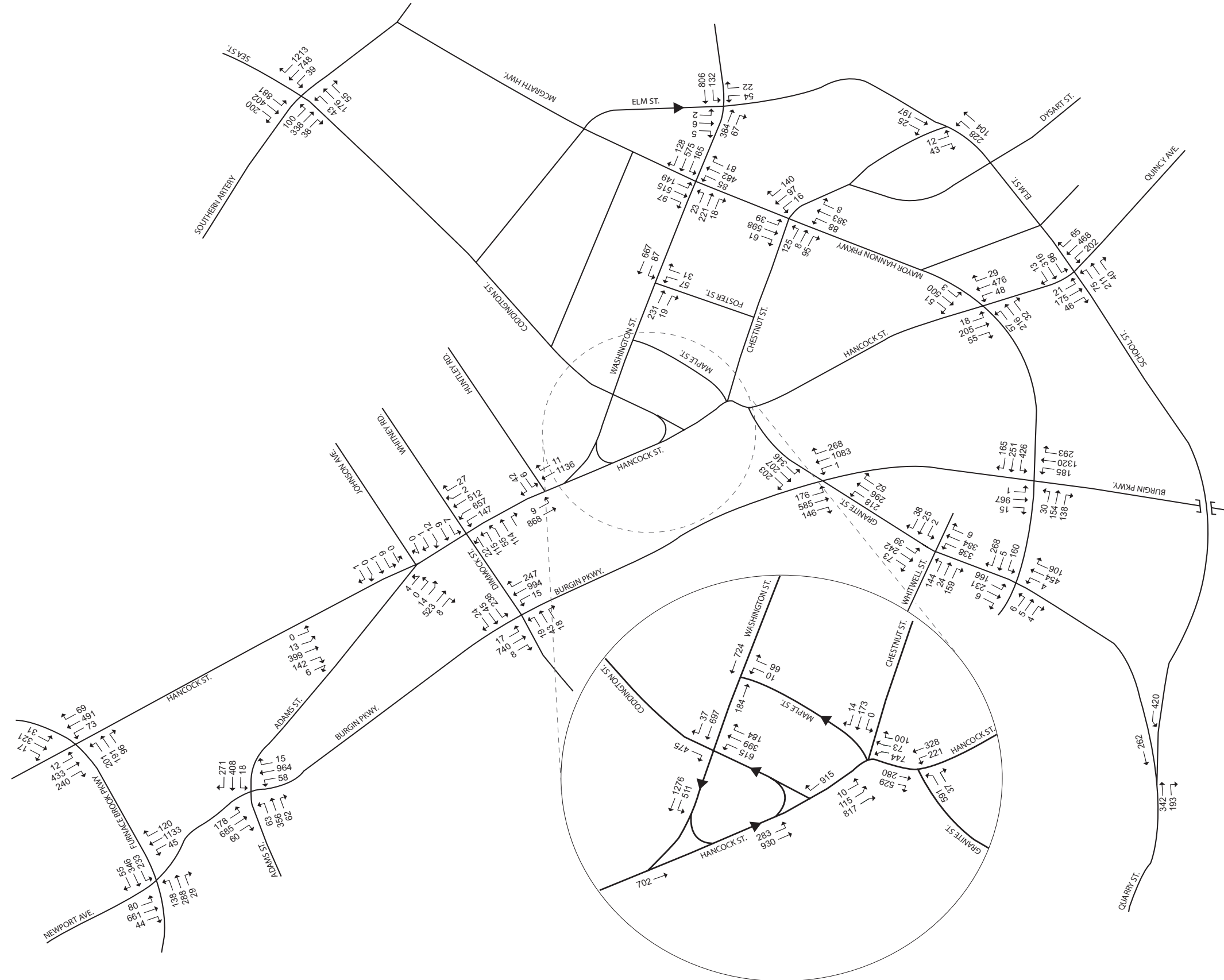
### Adjacent Transportation Improvement Projects

Several roadway improvements will take place as a part of the New Quincy Center Development. These improvements have not been finalized as the Environment Impact Report (EIR) for this project has not yet been filed. The proposed improvements will likely impact and improve operations in the extended study area of the Adams Green Transportation Improvement Project.

### Intersection Operations Analysis

An analysis was performed to evaluate the effect of the planned developments with the existing Hancock Street infrastructure, as shown in **Table 10** and **Table 11**. Mitigation due to the added traffic generated by the New Quincy Center Redevelopment has not been incorporated into the No-Build analysis as the EIR for the development has not yet been completed.

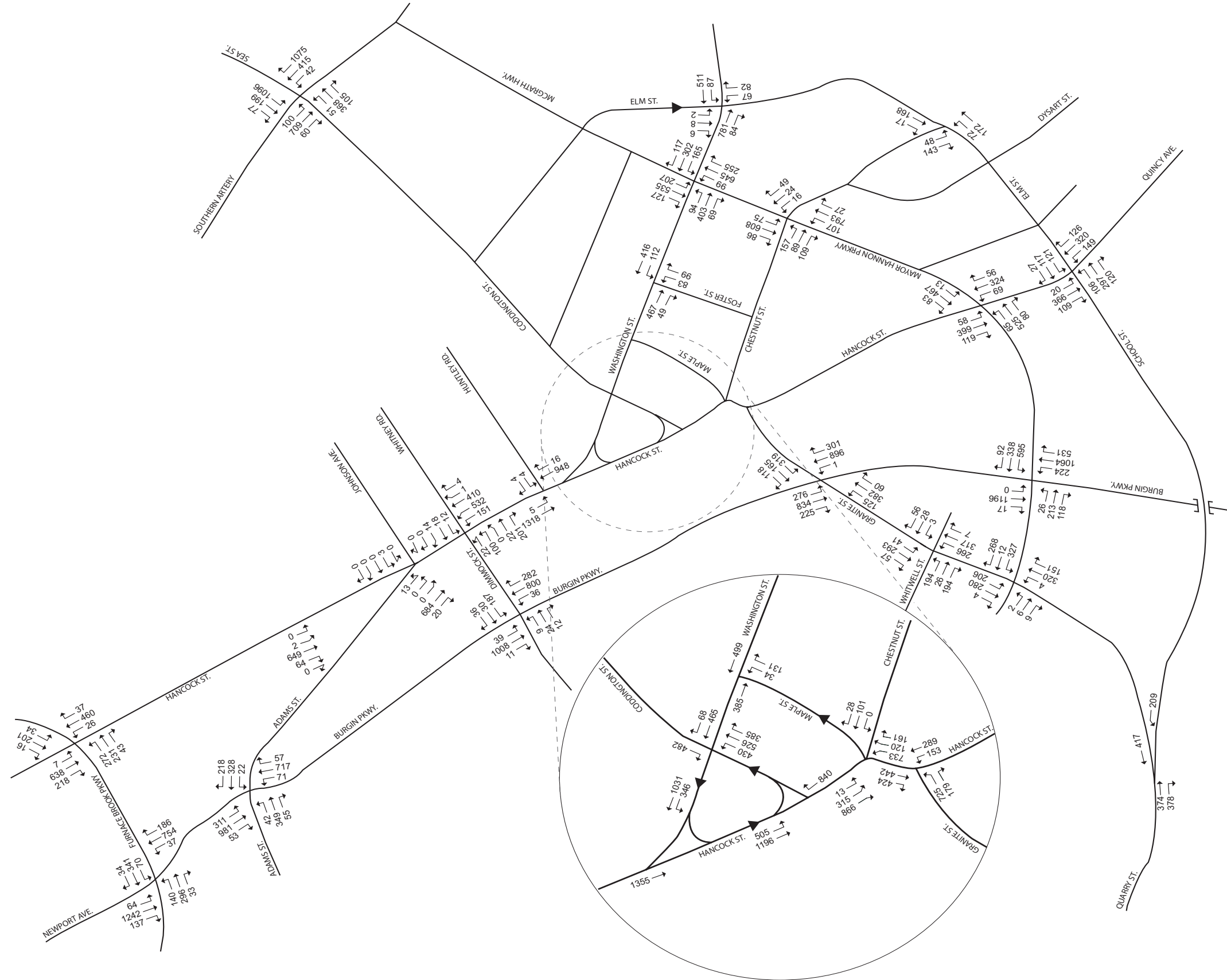
**Figure 16. No-Build Conditions (2022) AM Peak-hour Traffic Volumes**



Not to scale.



Figure 17. No-Build Conditions (2022) PM Peak-hour Traffic Volumes



Not to scale.

**Table 10. No-Build (2022) Capacity Analysis Summary, AM Peak Hour**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Primary Study Area</b>					
<b>Burgin Parkway/Dimmock Street</b>	<b>B</b>	<b>14.0</b>	—	—	—
Dimmock EB left/thru/right	B	19.2	0.19	19	68
Dimmock WB left	C	28.0	0.70	81	#251
Dimmock WB thru/right	B	19.1	0.17	20	67
Burgin NB left/thru   thru	B	13.3	0.65	127	331
Burgin NB right	A	8.9	0.19	0	43
Burgin SB left/thru   thru/right	B	11.2	0.50	85	228
<b>Hancock Street/Dimmock Street/Adams Street/Johnson Avenue</b>	<b>F</b>	<b>&gt;80.0</b>	—	—	—
Dimmock EB left/thru	F	>80.0	0.96	~122	#299
Dimmock EB right	C	26.0	0.35	53	97
Whitney WB left/thru/right	C	30.8	0.12	16	46
Hancock NB left	D	36.6	0.68	73	#163
Hancock NB bear left	F	>80.0	>1.00	~599	#918
Hancock NB thru/right	C	24.2	0.80	278	#572
Hancock SB left/thru   thru/right	F	>80.0	>1.00	~256	#411
Adams SEB left/bear right	F	>80.0	>1.00	~252	#457
Adams SEB bear right/right	F	>80.0	>1.00	~273	#491
Johnson SWB left/right	F	>80.0	0.86	7	26
<b>Hancock Street/Washington Street</b>	<b>B</b>	<b>13.7</b>	—	—	—
Washington WB left   left	D	40.3	0.78	190	m219
Washington WB right   right	A	6.3	0.77	0	#511
Hancock SB thru   thru	A	8.0	0.41	102	169
<b>Washington Street/Temple Street/Coddington Street</b>	<b>C</b>	<b>32.3</b>	—	—	—
Washington WB thru   thru/right	D	45.8	0.90	252	#444
Temple NB left   left	C	32.9	0.82	173	234
Temple NB thru	C	20.3	0.60	209	239
Temple NB right	A	1.7	0.19	0	46
Coddington SB right   right	C	32.7	0.76	97	201
<b>Hancock Street/Temple Street</b>	<b>A</b>	<b>8.7</b>	—	—	—
Hancock NB right   right	A	8.0	0.56	52	303
Hancock SB left   left	C	34.3	0.63	102	142
Hancock SB thru   thru	A	1.5	0.42	48	58
<b>Maple Street/Chestnut Street &amp; Hancock Street/Granite Street</b>	<b>C</b>	<b>23.5</b>	—	—	—
Granite EB left	D	39.4	0.74	194	285
Granite EB left/thru	D	41.0	0.76	198	294
Granite EB right	C	26.8	0.09	17	41
Hancock NB left	B	17.0	0.64	100	m163
Hancock NB thru/right	B	17.3	0.53	192	m280
Hancock SB left	B	19.1	0.28	36	59
Hancock SB thru	C	28.8	0.61	156	#326
Hancock SB right	B	17.4	0.66	399	475
Chestnut NWB right	A	0.2	0.15	0	0

## Functional Design Report

Adams Green Transportation Improvements

### No-Build Conditions (2022) Capacity Analysis Summary, AM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Extended Study Area</b>					
<b>Newport Avenue/Furnace Brook Parkway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	E	68.9	0.98	297	#718
Furnace Brook WB left/thru/right	F	>80.0	>1.00	~579	#1086
Newport NB left/thru   thru	F	>80.0	>1.00	~557	#955
Newport NB right	C	25.1	0.19	39	114
Newport SB left/thru   thru/right	F	>80.0	>1.00	192	#591
<b>Hancock Street/Furnace Brook Parkway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	D	48.1	0.95	139	#552
Furnace Brook WB left/thru/right	D	35.3	0.82	152	#411
Hancock NB left	C	32.8	0.53	25	#111
Hancock NB thru/right	E	71.8	>1.00	246	#640
Hancock SB left/thru	F	>80.0	>1.00	~228	#555
Hancock SB right	F	>80.0	>1.00	~137	#361
<b>Burgin Parkway/Newport Avenue/Adams Street</b>	<b>E</b>	<b>76.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Adams EB left	D	44.9	0.70	26	#117
Adams EB thru/right	D	39.9	0.86	181	#460
Adams WB left/thru	E	71.7	>1.00	195	#505
Adams WB right	C	22.6	0.39	41	143
Burgin NB left/thru   thru/right	F	>80.0	>1.00	~312	#592
Newport SB left/thru   thru/right	D	36.6	0.95	132	#446
<b>Hancock Street/Huntley Road</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Huntley WB left/right	D	27.5	0.25	—	23
Hancock NB thru   thru/right	A	0.0	0.48	—	0
Hancock SB left/thru   thru	A	0.7	0.37	—	1
<b>Southern Artery/Sea Street/Coddington Street</b>	<b>C</b>	<b>34.6</b>	<b>—</b>	<b>—</b>	<b>—</b>
Southern EB left*	F	>80.0	>1.00	~82	#191
Southern EB left/thru   thru/right	D	36.9	0.70	208	309
Southern WB left/thru   thru	D	48.6	0.96	204	#377
Southern WB right   right	C	20.5	0.45	0	264
Coddington NB left/thru   thru/right	C	27.6	0.69	105	m151
Sea SB left   left	C	35.9	0.83	278	#662
Sea SB thru	C	32.5	0.71	234	#649
Sea SB right	C	24.9	0.30	67	#239
<b>Washington Street/Foster Street</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB thru/right	A	0.0	0.16	—	0
Washington WB left/thru	A	2.1	0.08	—	7
Foster NB left/right	E	49.3	0.56	—	72
<b>Washington Street/McGrath Highway</b>	<b>D</b>	<b>42.4</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB left/thru   thru/right	B	16.8	0.20	60	133
Washington WB left/thru   thru/right	C	26.4	0.75	283	#628
McGrath NB left	D	36.4	0.47	65	84
McGrath NB thru   thru/right	E	63.4	0.93	250	#321
McGrath SB left	E	56.1	0.72	106	166
McGrath SB thru   thru	E	56.5	0.82	207	261

**No-Build Conditions (2022) Capacity Analysis Summary, AM Peak Hour (cont.)**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Elm Street</b>	—	—	—	—	—
Washington EB thru/right	A	0.0	0.29	—	0
Washington WB left/thru	A	3.6	0.14	—	12
Elm NB left/right	F	>50.0	>1.00	—	173
Elm SB left/thru/right	F	>50.0	0.17	—	15
<b>Mayor Hannon Parkway/Dennis Ryan Parkway/Miller Stile Road</b>	D	38.5	—	—	—
Dennis Ryan EB left	C	29.0	0.41	85	160
Dennis Ryan EB thru/right	C	24.9	0.09	5	50
Miller Stile WB left/thru/right	C	31.0	0.40	149	m253
Mayor Hannon NB left/thru   thru/right	C	29.7	0.59	110	230
Mayor Hannon SB left/thru   thru/right	D	50.9	0.59	271	353
<b>Elm Street/Miller Stile Road</b>	—	—	—	—	—
Elm EB left/thru	A	6.4	0.20	—	18
Elm WB thru/right	A	0.0	0.14	—	0
Miller Stile SB left/right	B	13.2	0.12	—	10
<b>Hancock Street/Mayor Hannon Parkway</b>	C	33.7	—	—	—
Mayor Hannon EB thru   thru/right	C	22.4	0.45	41	#166
Mayor Hannon WB thru   thru/right	C	30.5	0.61	133	#337
Hancock NB left/thru/right	E	55.4	0.96	357	#590
Hancock SB left/thru	B	10.6	0.40	43	196
Hancock SB right	A	3.6	0.05	0	m0
<b>Hancock Street/Quincy Avenue/School Street/Elm Street</b>	D	46.3	—	—	—
School EB left	C	25.6	0.30	31	85
School EB thru/right	D	39.9	0.58	155	#365
Elm WB left	C	28.1	0.30	60	117
Elm WB thru	D	49.1	0.66	242	#480
Quincy NB left	C	33.9	0.68	122	192
Quincy NB thru/right	E	66.3	0.97	433	#668
Hancock SB left/thru	C	32.7	0.79	157	#282
Hancock SB right	B	15.3	0.13	31	62
<b>Burgin Parkway/Granite Street</b>	D	47.4	—	—	—
Granite EB left	D	54.0	0.80	137	3343
Granite EB thru   thru	D	39.3	0.54	93	176
Granite EB right	D	35.0	0.03	0	39
Granite WB left	D	48.8	0.73	121	#306
Granite WB left/thru   thru	D	46.1	0.76	126	#263
Granite WB right	D	40.3	0.55	78	#209
Burgin NB thru   thru	E	56.2	0.99	356	#716
Burgin NB right	B	11.7	0.35	79	216
Burgin SB left	F	>80.0	>1.00	~88	#306
Burgin SB thru	C	26.4	0.75	294	#684
Burgin SB right	B	16.8	0.21	54	138
<b>Granite Street/School Street/Quarry Street</b>	—	—	—	—	—
Quarry EB thru	A	0.0	0.22	—	0
Quarry EB right	A	0.0	0.12	—	0
Granite WB thru	A	0.0	0.17	—	0
School NWB left	F	>50.0	>1.00	—	402

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### No-Build Conditions (2022) Capacity Analysis Summary, AM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Maple Street</b>	—	—	—	—	—
Washington EB thru	A	0.0	0.12	—	0
Washington WB thru	A	0.0	0.46	—	0
Maple NB left/right	C	16.1	0.20	—	19
<b>Granite Street/Whitwell Street</b>	<b>B</b>	<b>14.9</b>	—	—	—
Whitwell EB left/thru	C	20.6	0.57	44	#163
Whitwell EB right	B	16.5	0.15	6	57
Granite NB left	B	16.2	0.09	6	41
TJ Maxx WB left/thru/right	B	18.8	0.76	49	#207
Granite NB thru   thru/right	A	8.6	0.26	26	80
Granite SB left/thru   thru	B	14.8	0.34	33	84
Granite SB right	B	13.3	0.04	0	27

# = 50<sup>th</sup>/95<sup>th</sup> percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for the 95<sup>th</sup> percentile queue is metered by the upstream signal.

~ = The approach is above capacity for the 50th percentile traffic and the queue length could be much longer.

\* Defacto turn lane

**Table 11. No-Build (2022) Capacity Analysis Summary, PM Peak Hour**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Primary Study Area</b>					
<b>Burgin Parkway/Dimmock Street</b>	<b>B</b>	<b>13.0</b>	—	—	—
Dimmock EB left/thru/right	B	19.4	0.11	10	42
Dimmock WB left	C	28.6	0.68	62	#193
Dimmock WB thru/right	B	19.9	0.19	19	65
Burgin NB left/thru   thru	B	10.7	0.56	87	266
Burgin NB right	A	8.1	0.22	0	45
Burgin SB left/thru   thru/right	B	12.7	0.68	122	#407
<b>Hancock Street/Dimmock Street/Adams Street/Johnson Avenue</b>	<b>F</b>	<b>&gt;80.0</b>	—	—	—
Dimmock EB left/thru	D	41.8	0.73	59	#227
Dimmock EB right	C	22.3	0.51	58	165
Whitney WB left/thru/right	C	26.4	0.17	16	61
Hancock NB left	C	26.0	0.59	46	#163
Hancock NB bear left	F	92.8	>1.00	229	#708
Hancock NB thru/right	B	10.7	0.52	80	339
Hancock SB left/thru   thru/right	F	>80.0	>1.00	~221	#520
Adams SEB left/bear right	F	>80.0	>1.00	~247	#602
Adams SEB bear right/right	F	>80.0	>1.00	~248	#617
Johnson SWB left/right	D	51.6	0.27	1	11
<b>Hancock Street/Washington Street</b>	<b>B</b>	<b>11.5</b>	—	—	—
Washington WB left   left	D	44.9	0.71	124	178
Washington WB right   right	A	3.9	0.57	0	236
Hancock SB thru   thru	A	8.6	0.68	218	356
<b>Washington Street/Temple Street/Coddington Street</b>	<b>C</b>	<b>26.5</b>	—	—	—
Washington WB thru   thru/right	C	29.3	0.61	144	#276
Temple NB left   left	D	37.0	0.74	125	202
Temple NB thru	C	25.9	0.78	290	402
Temple NB right	A	1.3	0.33	0	133
Coddington SB right   right	C	24.8	0.70	177	217
<b>Hancock Street/Temple Street</b>	<b>B</b>	<b>11.5</b>	—	—	—
Hancock NB right   right	B	12.2	0.57	270	313
Hancock SB left   left	C	32.1	0.73	174	206
Hancock SB thru   thru	A	2.4	0.53	105	154
<b>Maple Street/Chestnut Street &amp; Hancock Street/Granite Street</b>	<b>D</b>	<b>41.6</b>	—	—	—
Granite EB left	D	43.0	0.83	245	#400
Granite EB left/thru	D	47.1	0.86	252	#424
Granite EB right	C	27.7	0.40	89	151
Hancock NB left	D	37.4	0.73	91	m80
Hancock NB thru/right	C	31.0	0.56	181	m161
Hancock SB left	C	29.0	0.70	58	197
Hancock SB thru	F	>80.0	>1.00	~404	#605
Hancock SB right	A	8.7	0.52	221	162
Chestnut NWB right	A	0.2	0.13	0	0



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### No-Build Conditions (2022) Capacity Analysis Summary, PM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Extended Study Area</b>					
<b>Newport Avenue/Furnace Brook Parkway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	F	>80.0	>1.00	~402	#611
Furnace Brook WB left/thru/right	C	34.3	0.76	286	419
Newport NB left/thru   thru	F	>80.0	>1.00	~349	#474
Newport NB right	C	22.6	0.24	53	108
Newport SB left/thru   thru/right	F	>80.0	>1.00	~614	#814
<b>Hancock Street/Furnace Brook Parkway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	D	45.1	0.95	162	#601
Furnace Brook WB left/thru/right	C	25.3	0.59	95	#249
Hancock NB left	C	24.4	0.28	8	41
Hancock NB thru/right	D	40.3	0.89	201	#539
Hancock SB left/thru	F	>80.0	>1.00	~360	#772
Hancock SB right	F	>80.0	>1.00	~116	#328
<b>Burgin Parkway/Newport Avenue/Adams Street</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Adams EB left	C	22.2	0.28	15	55
Adams EB thru/right	D	35.9	0.83	172	#437
Adams WB left/thru	D	39.8	0.85	151	#401
Adams WB right	C	21.5	0.26	23	98
Burgin NB left/thru   thru/right	F	>80.0	>1.00	~277	#5232
Newport SB left/thru   thru/right	F	>80.0	>1.00	~372	#776
<b>Hancock Street/Huntley Road</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Huntley WB left/right	D	29.9	0.06	—	4
Hancock NB thru   thru/right	A	0.0	0.40	—	0
Hancock SB left/thru   thru	A	0.2	0.56	—	1
<b>Southern Artery/Sea Street/Coddington Street</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Southern EB left/thru   thru/right	F	>80.0	>1.00	~511	#635
Southern WB left/thru   thru	F	>80.0	>1.00	~218	m#316
Southern WB right   right	D	45.8	0.37	64	136
Coddington NB left/thru   thru/right	C	31.6	0.66	152	#320
Sea SB left   left	C	29.9	0.85	286	#511
Sea SB thru	B	18.6	0.30	75	155
Sea SB right	B	16.7	0.05	2	33
<b>Washington Street/Foster Street</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB thru/right	A	0.0	0.33	—	0
Washington WB left/thru	A	3.2	0.13	—	11
Foster NB left/right	F	82.5	0.90	—	183
<b>Washington Street/McGrath Highway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB left/thru   thru/right	C	29.1	0.65	179	#465
Washington WB left/thru   thru/right	C	33.8	0.77	198	#505
McGrath NB left	D	41.1	0.60	56	m91
McGrath NB thru   thru/right	F	>80.0	>1.00	~492	#617
McGrath SB left	E	56.5	0.77	139	196
McGrath SB thru   thru	D	40.0	0.60	197	232

**No-Build Conditions (2022) Capacity Analysis Summary, PM Peak Hour (cont.)**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Elm Street</b>	—	—	—	—	—
Washington EB thru/right	A	0.0	0.55	—	0
Washington WB left/thru	A	4.1	0.15	—	14
Elm NB left/right	F	>80.0	>1.00	—	400
Elm SB left/thru/right	F	>80.0	0.35	—	31
<b>Mayor Hannon Parkway/Dennis Ryan Parkway/Miller Stile Road</b>	C	29.6	—	—	—
Dennis Ryan EB left	D	38.9	0.50	108	#339
Dennis Ryan EB thru/right	D	38.2	0.64	110	#354
Miller Stile WB left/thru/right	D	41.2	0.16	39	m84
Mayor Hannon NB left/thru   thru/right	C	31.5	0.85	273	371
Mayor Hannon SB left/thru   thru/right	C	21.7	0.67	197	119
<b>Elm Street/Miller Stile Road</b>	—	—	—	—	—
Elm EB left/thru	A	2.6	0.06	—	5
Elm WB thru/right	A	0.0	0.12	—	0
Miller Stile SB left/right	B	12.1	0.29	—	30
<b>Hancock Street/Mayor Hannon Parkway</b>	E	79.7	—	—	—
Mayor Hannon EB thru   thru/right	B	18.2	0.72	66	m#392
Mayor Hannon WB thru   thru/right	C	23.3	0.51	123	#301
Hancock NB left/thru/right	F	>80.0	>1.00	~432	#632
Hancock SB left/thru	E	63.7	0.91	338	m366
Hancock SB right	D	53.9	0.19	57	m77
<b>Hancock Street/Quincy Avenue/School Street/Elm Street</b>	D	51.6	—	—	—
School EB left	C	22.2	0.24	43	110
School EB thru/right	E	57.7	0.89	303	#683
Elm WB left	B	16.9	0.47	50	102
Elm WB thru	C	21.4	0.22	64	121
Quincy NB left	F	>80.0	0.94	88	#219
Quincy NB thru/right	D	47.3	0.86	344	#535
Hancock SB left/thru	E	79.4	>1.00	~365	#553
Hancock SB right	A	7.8	0.29	35	m39
<b>Burgin Parkway/Granite Street</b>	E	72.8	—	—	—
Granite EB left	D	41.1	0.49	72	166
Granite EB thru   thru	D	47.2	0.75	121	#240
Granite EB right	D	37.3	0.08	6	51
Granite WB left	D	50.9	0.72	105	#257
Granite WB left/thru   thru	D	47.1	0.74	107	#203
Granite WB right	D	39.1	0.32	40	116
Burgin NB thru   thru	D	41.4	0.90	276	#577
Burgin NB right	B	13.1	0.38	89	240
Burgin SB left	F	>80.0	>1.00	~209	#498
Burgin SB thru	E	75.4	>1.00	517	#1134
Burgin SB right	B	18.2	0.32	85	208
<b>Granite Street/School Street/Quarry Street</b>	—	—	—	—	—
Quarry EB thru	A	0.0	0.24	—	0
Quarry EB right	A	0.0	0.24	—	0
Granite WB thru	A	0.0	0.27	—	0
School NWB left	E	41.6	0.72	—	192

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### No-Build Conditions (2022) Capacity Analysis Summary, PM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Maple Street</b>	—	—	—	—	—
Washington EB thru	A	0.0	0.25	—	0
Washington WB thru	A	0.0	0.32	—	0
Maple NB left/right	D	27.1	0.53	—	74
<b>Granite Street/Whitwell Street</b>	<b>B</b>	<b>15.9</b>	—	—	—
Whitwell EB left/thru	C	30.9	0.78	61	#234
Whitwell EB right	B	17.2	0.26	17	84
Granite NB left	B	16.3	0.11	7	48
TJ Maxx WB left/thru/right	B	13.4	0.61	37	126
Granite NB thru   thru/right	A	8.4	0.21	21	66
Granite SB left/thru   thru	B	15.0	0.39	40	98
Granite SB right	B	13.2	0.03	0	24

# = 50<sup>th</sup>/95<sup>th</sup> percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for the 95<sup>th</sup> percentile queue is metered by the upstream signal.

~ = The approach is above capacity for the 50th percentile traffic and the queue length could be much longer.

\*Defacto turn lane

## Build Conditions (2022)

Under the Build Conditions, the portion of Hancock Street between Washington Street and Temple Street will be closed to vehicular traffic. The rotary-like traffic circulation around the United First Parish Church will be eliminated with Washington Street between Hancock Street and Coddington Street and Temple Street between Washington Street and Hancock Street becoming 2-way. The discontinuance of Hancock Street and reconstruction of the roadways around the proposed Adams Green site provide the opportunity to rethink pedestrian and bicycle connections through Quincy Center. The project area also includes some complex intersections that pose safety concerns. This section of the report discusses ways to improve intersections and corridors throughout the project area.

### Rerouted Traffic Volumes

This new circulation will re-route all traffic going through Quincy Center to the intersection of Washington Street/Temple Street/Coddington Street. In order to re-route traffic around the proposed Adams Green, HSH conducted an origin–destination study on November 15, 2011, the same date as the turning movement counts, during the morning and evening peak periods. The entering approach and departure for each vehicle was recorded around Quincy Center. The observed origin–destination patterns are shown in **Table 12**.

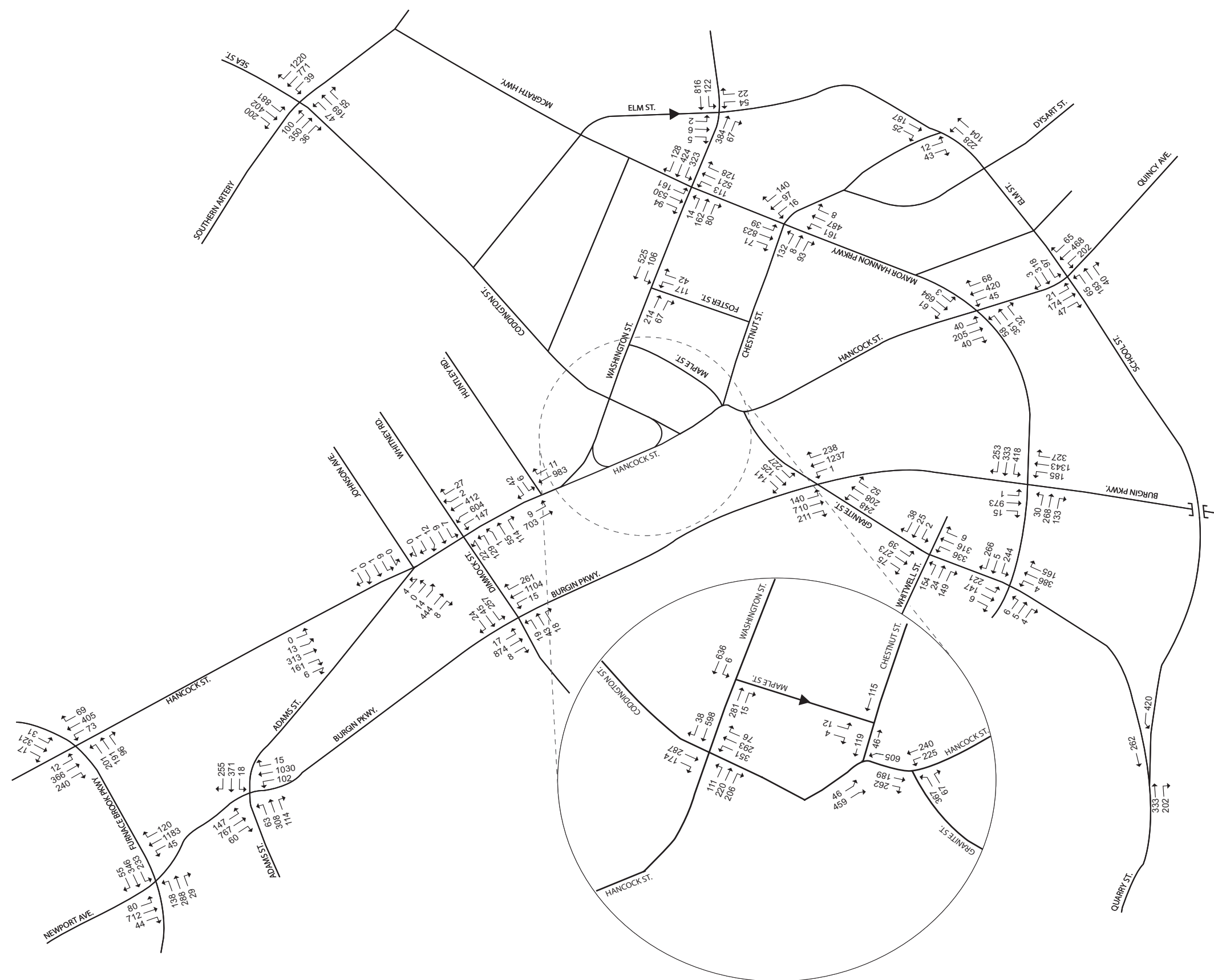
**Table 12. Origin-Destination Study**

From	To	a.m. Peak Hour		p.m. Peak Hour	
		# Vehicles	% of Total	# Vehicles	% of Total
Coddington Street	Hancock Street NB	192	42%	180	39%
	Hancock Street SB	269	58%	281	61%
Washington Street	Hancock Street NB	465	85%	349	83%
	Hancock Street SB	83	15%	73	17%
Temple Street	Hancock Street NB	500	93%	351	88%
	Hancock Street SB	35	7%	46	12%
Hancock Street NB	Hancock Street NB	500	67%	361	56%
	Coddington Street	214	29%	235	36%
	Washington Street	28	4%	52	8%
Hancock Street SB	Hancock Street NB	19	8%	37	10%
	Coddington Street	102	43%	125	32%
	Washington Street	117	49%	228	58%

Using the calculated percentages above, the future volumes were redistributed through the network to reflect the Hancock Street closure.

**Figure 18** and **Figure 19** show the re-routed traffic volumes for the peak hours.

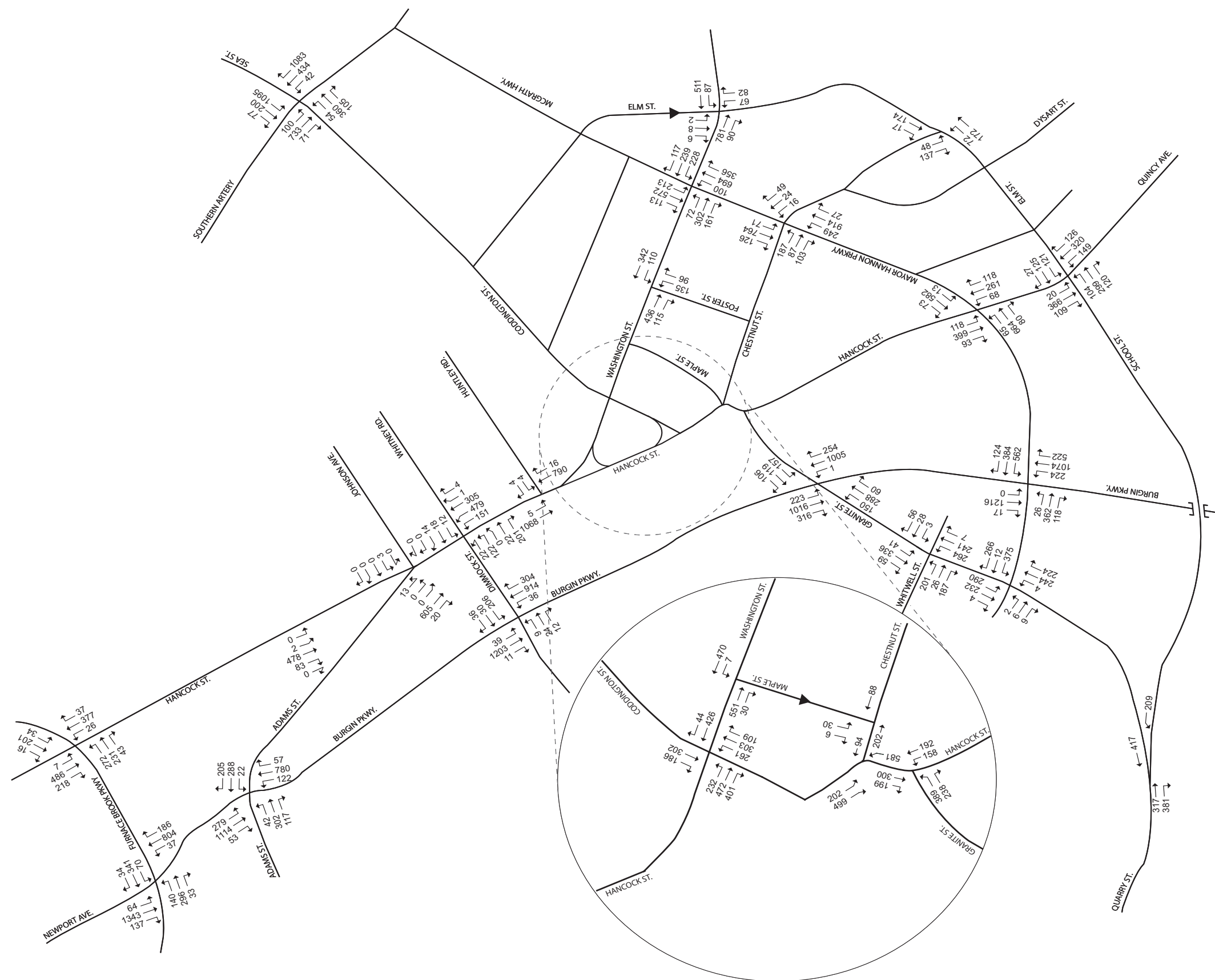
**Figure 18. Build Conditions (2022) AM Peak-hour Traffic Volumes**



Not to scale.



**Figure 19. Build Conditions (2022) PM Peak-hour Traffic Volumes**



## Hancock Street Cross-section

The design team has worked with the City of Quincy to develop design alternatives. These alternatives were compared using a design evaluation matrix. The evaluation criteria included a list of safety objectives, operational characteristics, parking requirements, and other features that are important to the City and the downtown revitalization plan. The matrix was used to determine the preferred alternative that is presented in this report and the 25% design submission. The following alternatives primarily pertain to the cross-section Hancock Street and Washington Street to the north of Temple Street and Coddington Street. The southern portion of the study area, including Temple Street through the intersection of Hancock Street/Granite Street, is consistent through all of the options.

The proposed design of Hancock Street and Washington Street is constrained by the building faces on either side of the street. The narrowest section is approximately 90 feet wide. The roadway is approximately 64 feet wide with 4 travel lanes and 2 parking lanes. The west side of the street has a 12.5-foot sidewalk, while the east side of the street has a 13.5-foot sidewalk.

### **Option 1: Optimal Streetscape**

Option 1 provides the optimal amount of sidewalk and landscaping throughout the project area and creates aesthetic transitions into the proposed Adams Green space. This option, as shown in **Figure 21**, includes 4 11-foot travel lanes with 8-foot parking lanes on both sides of the roadway. The sidewalks will be 7.5 feet wide with 6 feet of landscaping space for street trees.

This option does not provide separated space for bicyclists. As in the existing conditions, cyclists would travel along with vehicular traffic on the roadway or on the sidewalk. Due to travel lanes only being 11 feet wide, these cannot be considered shared bicycle lanes.

### **Option 2: Bike Lanes**

Option 2 would provide 5-foot bicycle lanes on both sides of the roadway in addition to the 4 11-foot travel lanes and 7-foot parking lanes. With the added bicycle lanes, there is not enough room to provide street trees on both sides of the roadway. The cross-section for Option 2 can be found in **Figure 21**.

This option provides separate travel ways for all users: vehicles, pedestrians, and bicyclists.

### **Option 3: Cycle Track**

Option 3 would provide a cycle track along Hancock Street that would be at the same elevation as the sidewalk. The roadway would include 4 11-foot travel lanes and 8-foot parking lanes. On one side of the roadway would be a 10-foot sidewalk. The other side of the roadway would be a 7.5-foot sidewalk with a 10-foot cycle track to accommodate travel in both directions. The cross-section for Option 2 can be found in **Figure 21**. The cycle track would run along Hancock Street and through the proposed Adams Green site.

Observations throughout Quincy Center showed that there is very little cycling activity, with the majority of riders currently riding on the sidewalks. This cycle track would encourage more casual riders in Quincy Center by being separate from vehicular traffic and the roadway.

The location of the cycle track on either side Hancock Street was also considered. The majority of pedestrian activity along Hancock Street occurs on the west side of the street due to the shops and restaurants. With the cycle track on the west side of the street, there is a possibility of conflicts riders and those parking on the street and walking into the shops. However, this would allow

those riding through Adams Green to stay on the same side of Hancock Street all the way through the green space. There is less pedestrian activity along east side of the street. However, riders would be required to cross Hancock Street at the crosswalk near President's Place to ride through the green space.

**Option 4: Shared Lanes**

Option 4 provides a mix of streetscape as well as shared bicycle lanes. As shown in Figure 23, this option includes 4 travel lanes: 11-foot inside travel lanes and 15-foot outside shared lanes.

Parking lanes will also be provided on both sides of the roadway. On the east side of Hancock Street, the sidewalk will be 8 feet wide. The west side of Hancock Street will have 6 feet of landscaping and 6.5 feet of sidewalk.

The wide outside lanes will have sharrows markings to encourage bicyclist to travel in the roadway.

**Preferred Alternative**

All of the options present compromises between the motor vehicle traffic, streetscape, sidewalk widths, and bicycle facilities. The sidewalk widths for all the options provide adequate space for the pedestrian walk zone; however, wider sidewalks with tree planters are desired throughout the project area to provide a seamless transition into the Adams Green park space.

The variation of bicycle facilities throughout the alternatives is an important consideration when selecting a preferred alternative. The higher degree of separation between bicyclists and motor vehicles is a key consideration for increasing bicycle ridership and comfort. Given the anticipated traffic volumes and speeds on the roadway, it should be anticipated that in the absence of dedicated facilities, bicycles will likely operate on the sidewalk where there is the potential for creating conflicts with pedestrians.

In order to incorporate both bicycle accommodations and some streetscape design, a combination of Option 2, bike lanes, and Option 4, shared lanes, is preferred. The preferred alternative will have 2 11-foot travel lanes in each direction with 5-foot bicycle lanes and 7-foot parking lanes. This cross-section will provide separated lanes for bicyclists while also allowing enough sidewalk space to include raised planters on the western side of Hancock Street. By including bicycle lanes, vehicles, bicyclists, and pedestrians will each have their own separate space reducing the likelihood for conflicts.

Figure 20. Hancock Street Cross-section: Option 1-Optimal Streetscape

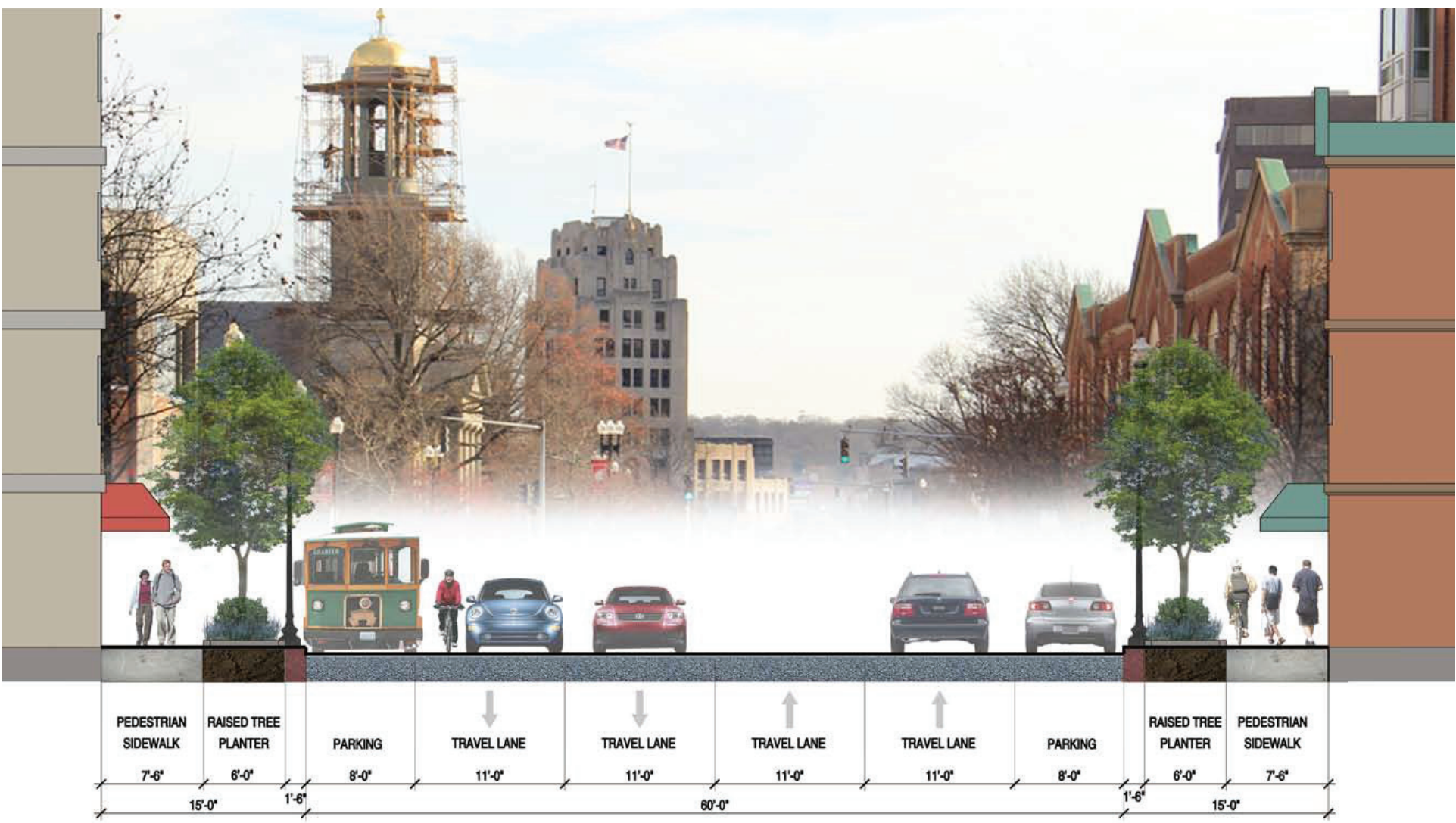




Figure 21. Hancock Street Cross-section: Option 2-Bicycle Lanes

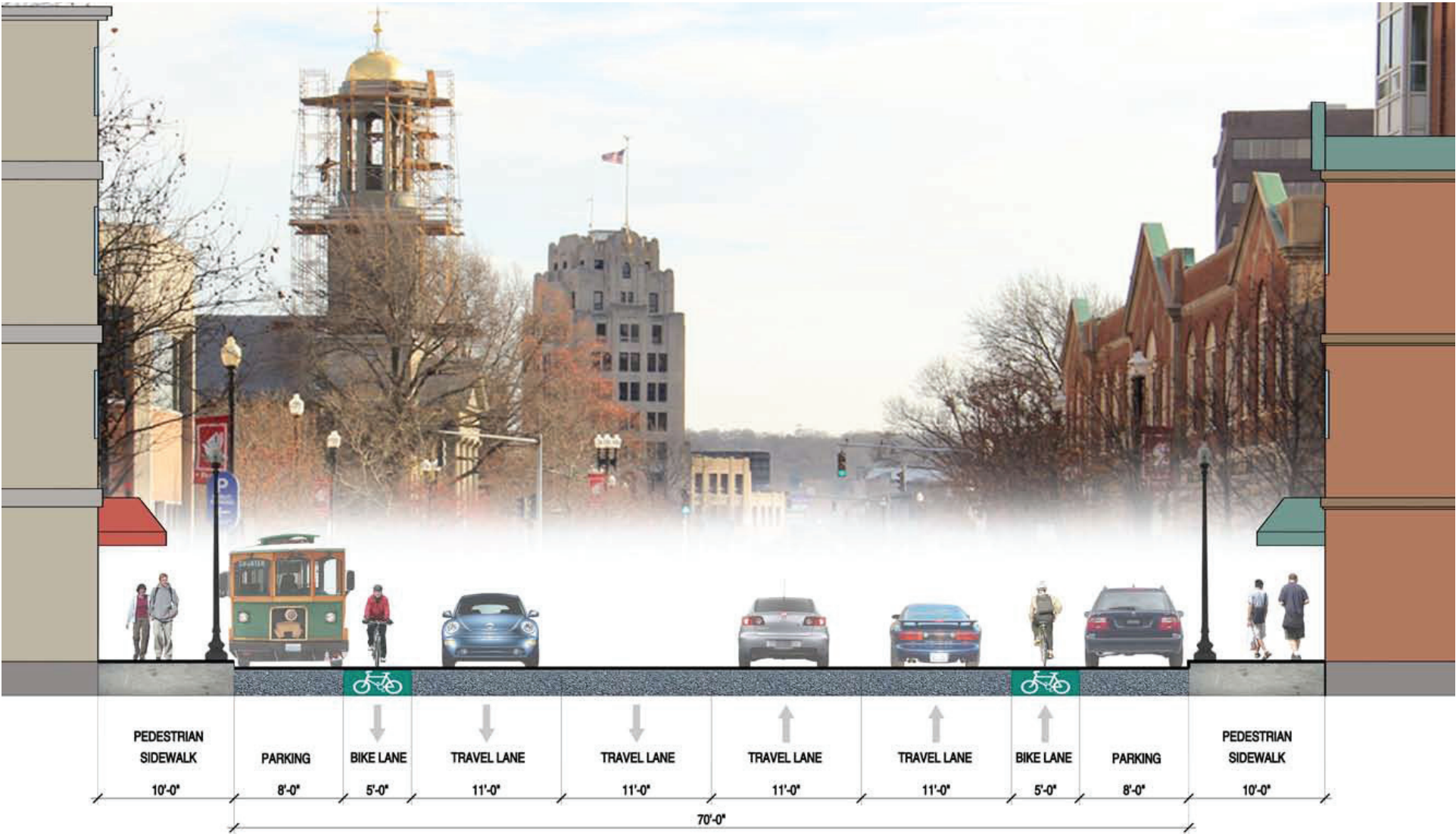




Figure 22. Hancock Street Cross-section: Option 3-Cycle Track

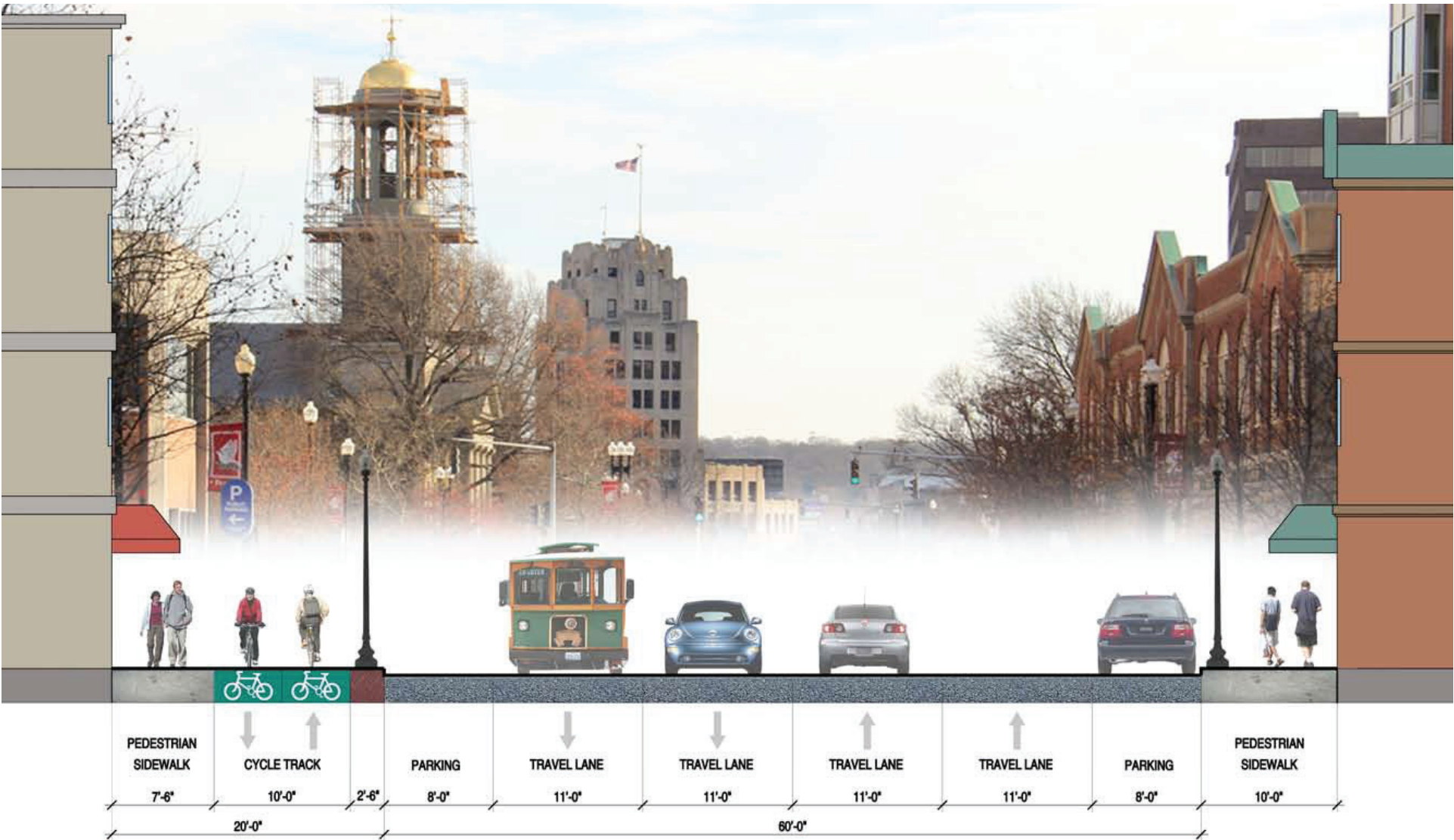
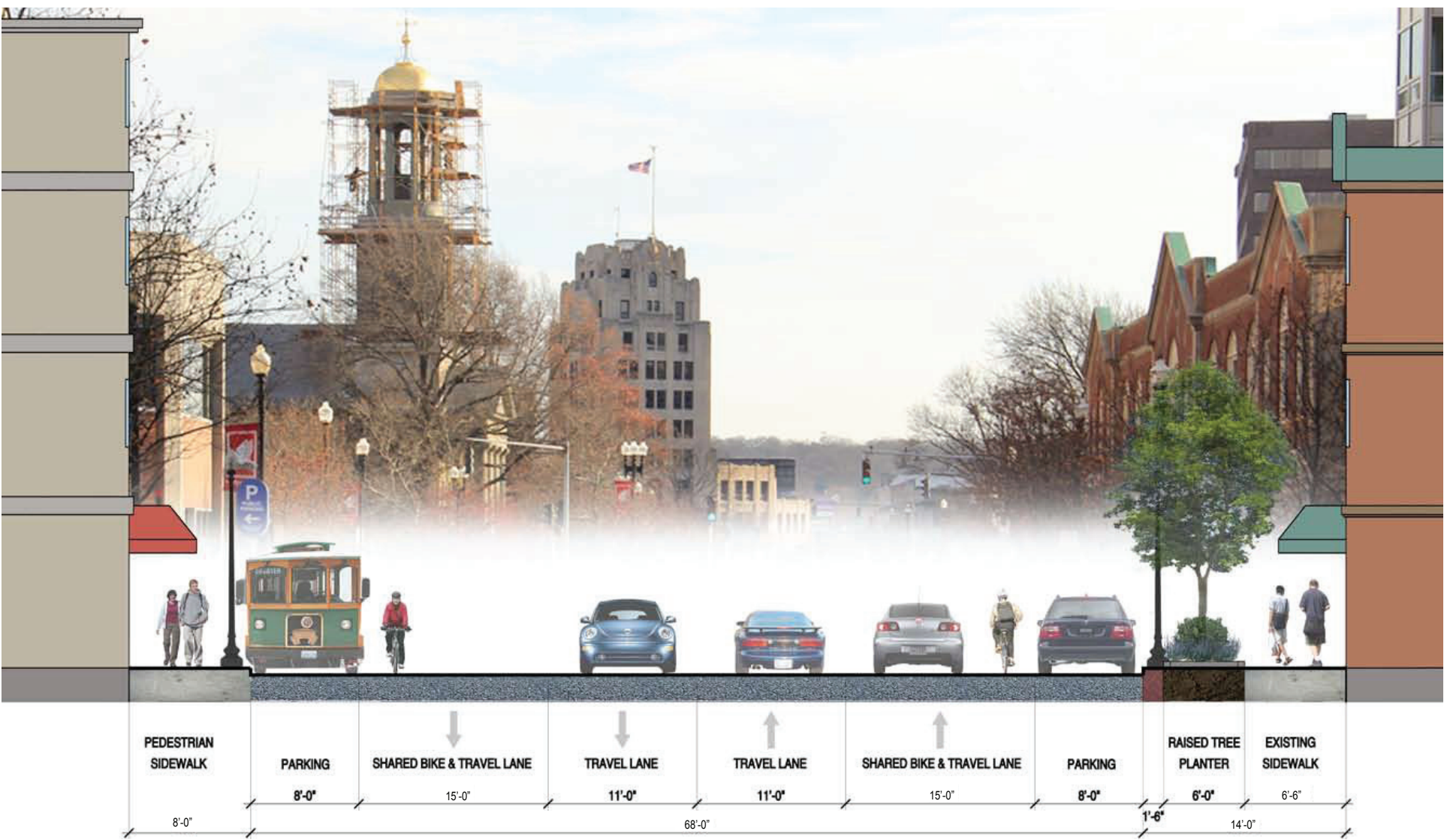


Figure 23. Hancock Street Cross-section: Option 4-Shared Lanes



## **Raised Crosswalks**

With the closure of Hancock Street between Washington Street and Temple Street, the existing traffic signals at Hancock Street/Washington Street and Hancock Street/Temple Street can be removed. However, to maintain access to the Quincy Center Station, City Hall, and the Adams Green site, crosswalks are proposed to the north and south of the street closure. As shown in **Figure 10** and **Figure 11**, these are currently major crossings for pedestrians, and they are anticipated to have even more activity with the construction of Adams Green and the New Quincy Center Development.

As discussed previously, this area is ranked #8 in the state for pedestrian crash clusters. As a traffic calming measure, raised crosswalks are proposed for these 2 crossings to the north and south of the Adams Green site. The raised crossings will require vehicles to reduce their speeds along Hancock Street while also improving the visibility of pedestrians in the roadway. Additionally, different control options for these raised crossings have been considered.

## **Signalized Crossing**

Under existing conditions, there are enough pedestrian volumes at the northern crossing to warrant a traffic signal. With the new revitalization of the downtown area, it is anticipated that there will also be enough volume at the southern crossing to warrant a signal. However, since the 2 crossings are currently signalized, the number of gaps in vehicular traffic cannot be collected to determine if a conventional traffic signal is warranted at these locations.

## **In-pavement Lighting**

In-pavement lighting was considered at the crossings as crash data shows that most of the pedestrian related crashes occurred at night. The in-pavement lighting would illuminate the crosswalks indicating the presence to a pedestrian crossing. In-pavement lights, which are amber lights embedded in the pavement along both sides of the crosswalk and oriented to face oncoming traffic, are another tool to alert motorists of pedestrian crossings. When activated by pedestrians, either through passive detection or pushbutton, the lights flash for a set amount of time or until the pedestrian has cleared the crosswalk. In short term studies, yielding compliance and braking distances increase especially at night.

However, there are some operational and maintenance concerns including:

- Roadway users not understanding how the device works,
- Inaccurate detection systems,
- Lack of compliance with potential for increased crashes due to pedestrians assuming the right-of-way when lights are flashing,
- Placement of lights in the path of bicycle wheels
- Repaving and patching issues,
- Lights can be damaged due to high volumes of traffic, snow plows, and diminishing light quality from scratches or dirt; and,
- Replacement of lights will require the closure of traffic lanes.

## **Rectangular Rapid Flashing Beacon (RRFB)**

The RRFB is a device that is used at unsignalized intersections to increase driver compliance of yielding to pedestrians. The beacons are placed on either side of the roadway with LED lights that flash in a wig-wag pattern. This device has been proven by research to have a high compliance rate of approximately 80%.

**Pedestrian Hybrid Beacon**

A pedestrian hybrid beacon would operate similarly to a traffic signal at these locations. Vehicle and pedestrian volumes are high enough at both crossings in order to warrant a hybrid beacon. The application of the hybrid beacon is featured in the 2009 MUTCD. The advantage of these signals over flashing beacons is that vehicle traffic receives red indications while pedestrians and bicyclists have indications signifying a protected crossing. When the crossing is not actuated, the hybrid beacon will not be illuminated. Pedestrians and bicyclists can either be directed to push a button to actuate the protected phase or detectors can be provided. When actuated, the beacons will go through a sequence of flashing yellow, steady yellow, solid double red, alternating flashing double red, and dark. The intervals for the sequence will be calculated using vehicle and pedestrian clearance calculations. The beacons will also be coordinated with the adjacent signals in order prevent spillback and wasted green time.

For the raised crosswalks, it is proposed that pedestrian hybrid beacons be used. This will not only make drivers more aware of the presence of the crosswalks, but also require vehicles to stop when the beacons are activated.

**Washington Street/Coddington Street/Temple Street**

By removing the roundabout-like circulation around the church, all vehicles entering the project area will be processed through the intersection Washington Street/Coddington Street/Temple Street. Under proposed conditions, this intersection will become a 4-way intersection with approaches from each direction.

In order for this intersection to operate acceptably with the added New Quincy Center Development traffic, some turn restrictions are proposed to increase capacity. Washington Street westbound left-turns are to be restricted as there are several alternate routes by which vehicles can travel from Washington Street to Burgin Parkway and Granite Street. With the opening of Mayor Hannon Parkway, it is no longer necessary to come through Quincy Center to travel across town in an east-west direction. Similarly, the Coddington Street southbound left turns will be prohibited.

The Washington Street eastbound approach will consist of a left-turn lane, a through lane, and a right-turn lane. The Washington Street westbound approach will have a through lane and a right-turn lane. The Temple Street northbound approach will have an exclusive left-turn lane and a shared through/right-turn lane. The Coddington Street southbound approach will have a through lane and an exclusive right-turn lane.

The proposed traffic signal phasing for this intersection is shown in **Figure 24**.

**Hancock Street/Granite Street/Chestnut Street/Maple Street**

Currently, this intersection operates as 2 intersections, Hancock Street/Granite Street being signalized and Hancock Street/Chestnut Street/Maple Street unsignalized. With the 2 intersections being in such proximity to one another, traffic operations are complex and safety is an issue. As previously reported, Hancock Street/Granite Street has a crash rate that is above the District 6 average with 35 crashes reported for the 3 year time period between 2007 and 2009. There is a lot of open pavement in this area, making pedestrian crossings difficult.

A major concern is the unsignalized Hancock Street/Chestnut Street/Maple Street intersection. At this location, the Hancock Street left turns have a storage lane and must yield to oncoming traffic.



However, it is very difficult to see vehicles coming around the corner from Granite Street. Vehicles also tend to travel at high speeds coming from Granite Street eastbound onto Maple Street, causing a very dangerous situation for pedestrians crossing Maple Street.

The study team proposes to signalize Hancock Street/Chestnut Street/Maple Street and combine the 2 intersections to operate as one. In order to reduce the amount of pavement and create a simpler intersection, the corner between the Hancock Street northbound and Chestnut Street northwest bound approaches will be extended. This will allow the northbound and southbound Hancock Street approaches to be better aligned. The extended curb will also slow down the Granite Street movements. In order to maximize the sidewalk and affect it will have on vehicle speeds, right turns from Granite Street and Hancock Street will not be allowed onto Chestnut Street. The direction of Maple Street will also be reversed. By implementing these circulation changes and turn restrictions, crossing will be shorter for pedestrians and intersection safety will be improved. The Chestnut Street approach will remain as right-turn only.

### **Hancock Street/Dimmock Street/Adams Street/Johnson Avenue**

The geometry of this location is very complex, resulting in LOS F under existing and no-build conditions. To improve the operations and safety of this intersection, major geometric changes and a reduction in the number of approaches are recommended. These extensive improvements are not a part of the scope of this project; however, interim improvements to the traffic signal timings, including changes to splits and lengthening of the pedestrian phases, can be made to improve operations.

### **Hancock Street/MBTA Busway/Russell Park**

As shown in **Figure 15**, the MBTA Busway serves several buses as the Quincy Center MBTA Station is a hub to all of the area bus routes. With the amount of buses that enter and exit the station, these maneuvers are difficult due to the amount of Hancock Street volume and the stop-controlled busway. There are few gaps in traffic during the peak hours resulting in heavy delays for the busway. To improve operations and reduce delay to the MBTA buses, a traffic signal is proposed at this location. The signal will run on the same controller as the Hancock Street/Dimmock Street/Adams Street/Johnson Avenue signal, allowing progression on Hancock Street to be maintained. **Figure 25** shows the proposed phasing for Hancock Street/Dimmock Street/Adams Street/Johnson Avenue with the added busway signal.

### **Burgin Parkway/Dimmock Street**

With the closure of a portion of Hancock Street and the addition of the New Quincy Center Development, Burgin Parkway/Dimmock Street is expected to maintain operations of LOS D or better during all time periods. Therefore, no signal or geometric modifications are recommended for this location.

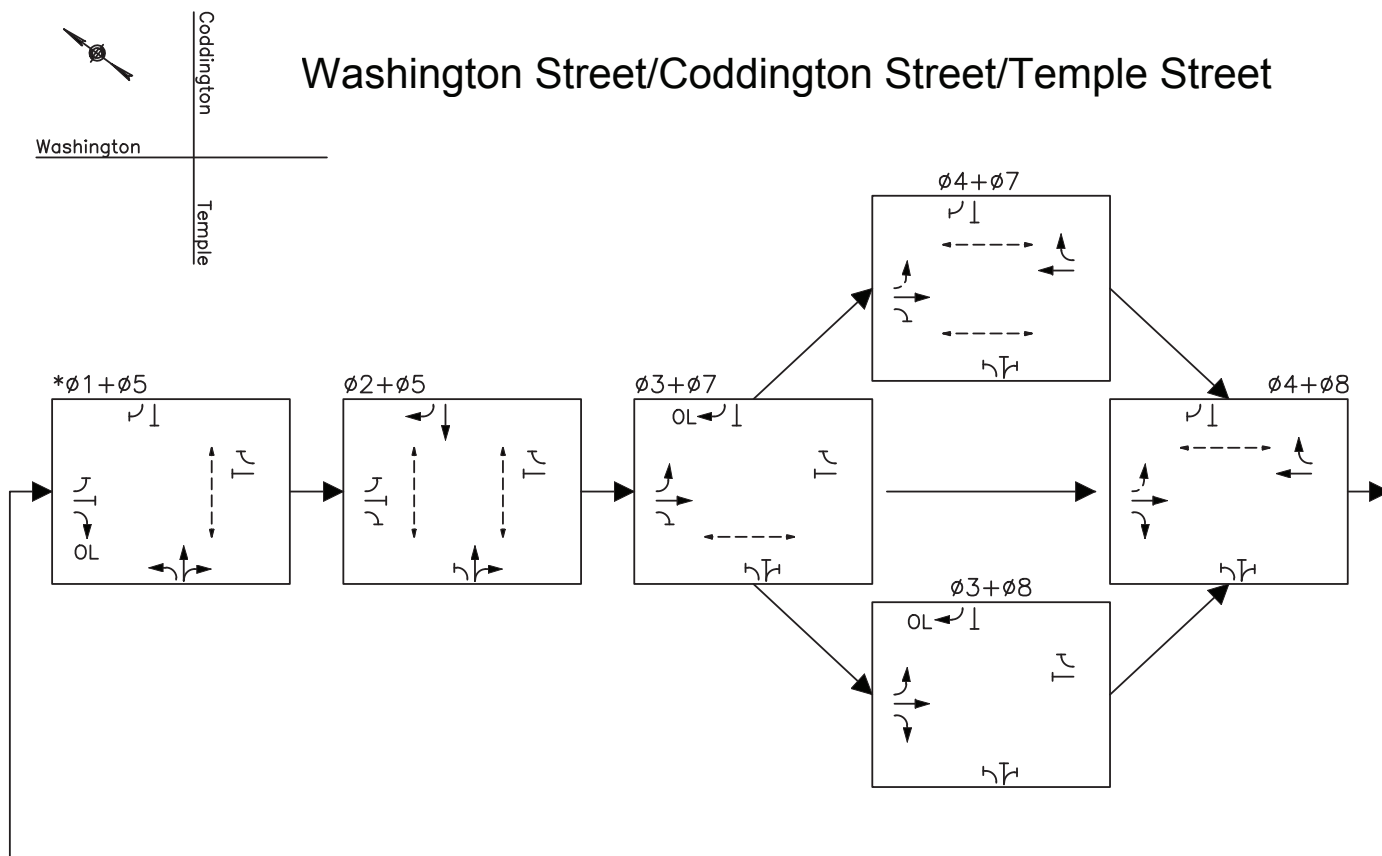
The proposed plans for the new roadway alignment and lane usage can be found in **Appendix F**.

### **Intersection Operations Analysis**

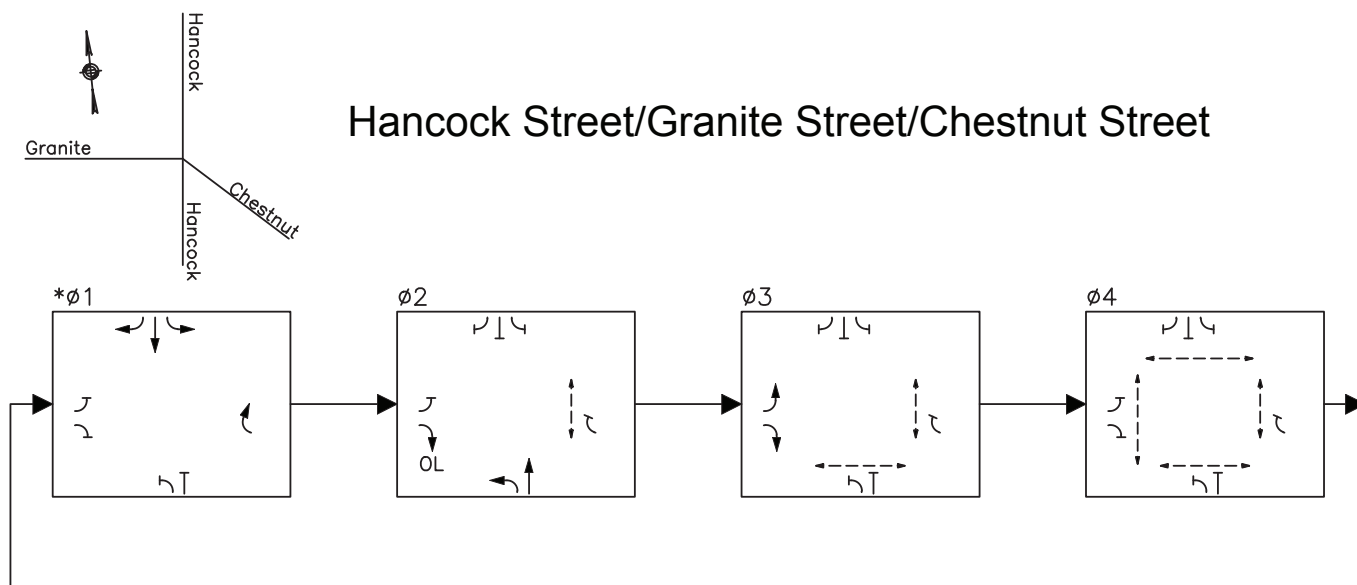
An analysis was performed to evaluate the effect of the Adams Green Transportation Improvement Project with future volumes, as shown in **Table 13** and **Table 14**. Mitigation due to the added traffic generated by the New Quincy Center Redevelopment has not been incorporated into the Build analysis as the EIR for the development has not yet been completed.



**Figure 24. Proposed Phasing Diagrams**

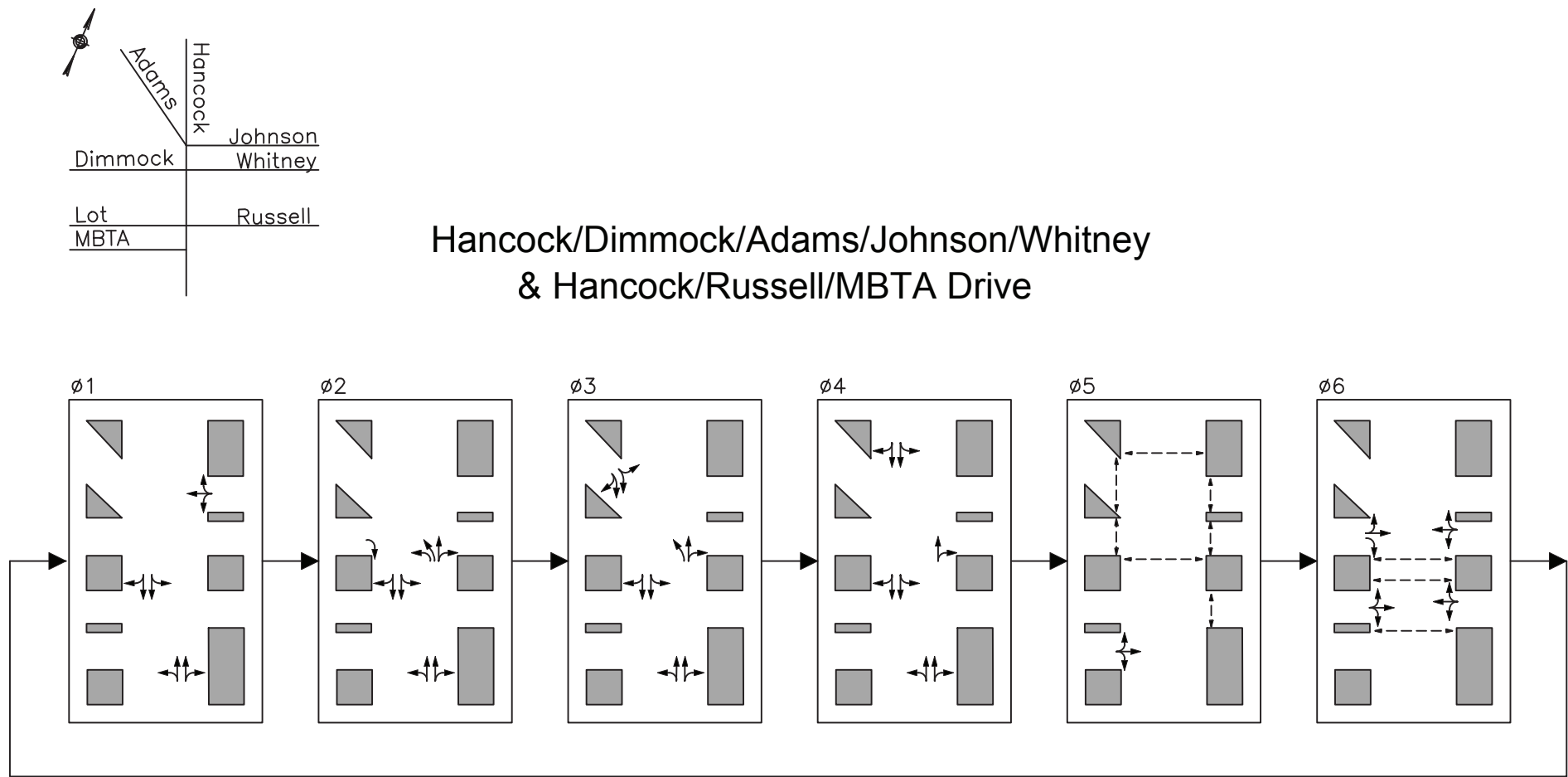


\*Coordinated Phase(s)



\*Coordinated Phase

Figure 25. Proposed Phasing Diagrams



**Table 13. Build Conditions (2022) Capacity Analysis Summary, AM Peak Hour**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Primary Study Area</b>					
<b>Burgin Parkway/Dimmock Street</b>	<b>B</b>	<b>15.5</b>	<b>—</b>	<b>—</b>	<b>—</b>
Dimmock EB left/thru/right	B	18.9	0.18	19	68
Dimmock WB left	C	29.4	0.74	89	#278
Dimmock WB thru/right	B	18.8	0.16	20	67
Burgin NB left/thru   thru	B	15.5	0.74	149	#430
Burgin NB right	A	9.4	0.21	0	44
Burgin SB left/thru   thru/right	B	12.9	0.60	107	283
<b>Hancock Street/Dimmock Street/Adams Street/Johnson Avenue</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Dimmock EB left/thru	F	>80.0	>1.00	~181	#336
Dimmock EB right	D	35.6	0.40	69	106
Whitney WB left/thru/right	D	39.6	0.13	20	49
Hancock NB left	E	61.5	0.86	66	m#121
Hancock NB bear left	F	>80.0	>1.00	~580	m#767
Hancock NB thru/right	B	14.3	0.67	90	m127
Hancock SB left/thru   thru/right	F	>80.0	>1.00	~269	#380
Adams SEB left/bear right	F	>80.0	>1.00	176	#416
Adams SEB bear right/right	F	>80.0	>1.00	187	#444
Johnson SWB left/right	F	>80.0	0.86	8	29
<b>Hancock Street/Washington Street</b>	<b>A</b>	<b>2.5</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington WB left   left	A	1.5	0.67	26	m43
Hancock SB thru   thru	A	4.6	0.26	48	m62
<b>Washington Street/Temple Street/Coddington Street</b>	<b>E</b>	<b>66.4</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB left	F	>80.0	0.94	58	#169
Washington EB thru	C	23.3	0.30	100	190
Washington EB right	A	9.5	0.28	31	68
Washington WB thru	F	>80.0	>1.00	~543	#765
Washington WB right	C	20.4	0.07	10	33
Temple NB left	F	>80.0	>1.00	~294	#470
Temple NB thru   right	B	14.5	0.56	72	170
Coddington SB thru	E	66.3	0.89	217	#374
Coddington SB right	D	38.5	0.19	11	76
<b>Hancock Street/Temple Street</b>	<b>A</b>	<b>3.7</b>	<b>—</b>	<b>—</b>	<b>—</b>
Hancock NB thru	A	3.3	0.63	23	m32
Hancock SB thru	A	4.2	0.43	21	m40
<b>Maple Street/Chestnut Street &amp; Hancock Street/Granite Street</b>	<b>E</b>	<b>59.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Granite EB left	E	75.6	0.96	280	#474
Granite EB right	C	31.7	0.05	0	36
Chestnut WB right	C	31.5	0.10	0	0
Hancock NB left	E	60.6	0.83	166	#297
Hancock NB thru/right	E	75.4	0.92	181	#331
Hancock SB left	D	36.5	0.12	38	80
Hancock SB thru	D	42.3	0.46	157	234
Hancock SB right	E	54.7	0.75	~234	#409

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### Build Conditions (2022) Capacity Analysis Summary, AM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Extended Study Area</b>					
<b>Newport Avenue/Furnace Brook Parkway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	E	68.9	0.98	297	#718
Furnace Brook WB left/thru/right	F	>80.0	>1.00	~579	#1086
Newport NB left/thru   thru	F	>80.0	>1.00	~607	#1016
Newport NB right	C	25.2	0.19	40	115
Newport SB left/thru   thru/right	F	73.3	>1.00	~235	#663
<b>Hancock Street/Furnace Brook Parkway</b>	<b>F</b>	<b>40.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	D	44.6	0.94	134	#547
Furnace Brook WB left/thru/right	D	35.2	0.81	151	#412
Hancock NB left	C	24.0	0.39	23	84
Hancock NB thru/right	D	38.9	0.87	187	#514
Hancock SB left/thru	C	31.0	0.75	143	#399
Hancock SB right	E	59.3	0.85	65	#253
<b>Burgin Parkway/Newport Avenue/Adams Street</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Adams EB left	C	27.4	0.54	24	#102
Adams EB thru/right	D	43.0	0.89	184	#472
Adams WB left/thru	D	54.0	0.94	173	#456
Adams WB right	C	22.2	0.34	33	125
Burgin NB left/thru   thru/right	F	>80.0	>1.00	~401	#701
Newport SB left/thru   thru/right	D	49.5	1.00	143	#511
<b>Hancock Street/Huntley Road</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Huntley WB left/right	C	22.3	0.42	—	18
Hancock NB thru   thru/right	A	0.0	0.22	—	0
Hancock SB left/thru   thru	A	0.6	0.30	—	1
<b>Southern Artery/Sea Street/Coddington Street</b>	<b>D</b>	<b>36.2</b>	<b>—</b>	<b>—</b>	<b>—</b>
Southern EB left*	F	>80.0	>1.00	~80	#189
Southern EB left/thru   thru/right	C	34.5	0.67	215	320
Southern WB left/thru   thru	D	39.9	0.92	224	3385
Southern WB right   right	C	20.4	0.45	9	243
Coddington NB left/thru   thru/right	D	44.9	0.69	95	135
Sea SB left   left	D	41.1	0.88	277	#662
Sea SB thru	D	36.0	0.76	233	#649
Sea SB right	C	26.3	0.31	66	#239
<b>Washington Street/Foster Street</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB thru/right	A	0.0	0.18	—	0
Washington WB left/thru	A	2.6	0.10	—	9
Foster NB left/right	F	>50.0	0.74	—	128
<b>Washington Street/McGrath Highway</b>	<b>E</b>	<b>57.4</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB left/thru   thru/right	B	17.2	0.19	56	131
Washington WB left/thru   thru/right	C	32.2	0.84	296	#670
McGrath NB left	D	42.8	0.67	88	m122
McGrath NB thru   thru/right	F	>80.0	>1.00	295	#414
McGrath SB left	E	64.7	0.80	115	177
McGrath SB thru   thru	D	53.2	0.79	215	266

**Build Conditions (2022) Capacity Analysis Summary, AM Peak Hour (cont.)**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Elm Street</b>	—	—	—	—	—
Washington EB thru/right	A	0.0	0.29	—	0
Washington WB left/thru	A	3.4	0.13	—	11
Elm NB left/right	F	>50.0	>1.00	—	193
Elm SB left/thru/right	F	>50.0	0.18	—	15
<b>Mayor Hannon Parkway/Dennis Ryan Parkway/Miller Stile Road</b>	D	37.6	—	—	—
Dennis Ryan EB left	D	41.6	0.61	91	#316
Dennis Ryan EB thru/right	C	31.3	0.09	5	65
Miller Stile WB left/thru/right	D	40.8	0.50	153	m#448
Mayor Hannon NB left	F	98.0	1.00	110	#258
Mayor Hannon NB thru/right	c	24.3	0.60	240	313
Mayor Hannon SB left/thru   thru/right	C	33.5	0.69	311	138
<b>Elm Street/Miller Stile Road</b>	—	—	—	—	—
Elm EB left/thru	A	6.4	0.19	—	18
Elm WB thru/right	A	0.0	0.14	—	0
Miller Stile SB left/right	B	13.1	0.12	—	10
<b>Hancock Street/Mayor Hannon Parkway</b>	D	36.6	—	—	—
Mayor Hannon EB thru   thru/right	C	25.3	0.70	41	m#250
Mayor Hannon WB thru   thru/right	D	37.4	0.82	203	#506
Hancock NB left/thru/right	D	52.8	0.95	335	#558
Hancock SB left/thru	C	22.3	0.50	119	194
Hancock SB right	B	17.5	0.04	1	21
<b>Hancock Street/Quincy Avenue/School Street/Elm Street</b>	D	43.5	—	—	—
School EB left	C	25.4	0.26	27	75
School EB thru/right	D	38.7	0.54	142	#328
Elm WB left	B	18.7	0.29	44	86
Elm WB thru	D	37.1	0.67	211	#474
Quincy NB left	C	33.7	0.68	122	192
Quincy NB thru/right	E	66.3	0.97	433	#668
Hancock SB left/thru	C	32.4	0.79	156	#281
Hancock SB right	B	15.3	0.13	31	63
<b>Burgin Parkway/Granite Street</b>	D	52.3	—	—	—
Granite EB left	E	58.9	0.86	147	#404
Granite EB thru   thru	D	35.4	0.36	58	126
Granite EB right	C	33.0	0.03	0	39
Granite WB left	D	43.3	0.59	74	172
Granite WB left/thru   thru	D	42.0	0.61	75	150
Granite WB right	D	38.9	0.36	36	116
Burgin NB thru   thru	F	82.4	>1.00	~412	#862
Burgin NB right	B	11.9	0.32	68	189
Burgin SB left	E	69.9	0.92	45	3229
Burgin SB thru	C	32.2	0.87	353	#914
Burgin SB right	B	15.8	0.29	71	196



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Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Granite Street/School Street/Quarry Street</b>	—	—	—	—	—
Quarry EB thru	A	0.0	0.21	—	0
Quarry EB right	A	0.0	0.13	—	0
Granite WB thru	A	0.0	0.17	—	0
School NWB left	F	>50.0	>1.00	—	392
<b>Washington Street/Maple Street</b>	—	—	—	—	—
Washington EB thru/right	A	0.0	0.19	—	0
Washington WB left/thru	A	0.1	0.01	—	0
<b>Granite Street/Whitwell Street</b>	<b>B</b>	<b>15.3</b>	—	—	—
Whitwell EB left/thru	C	21.4	0.61	47	#168
Whitwell EB right	B	16.4	0.15	7	56
Granite NB left	B	16.1	0.09	6	40
TJ Maxx WB left/thru/right	B	18.7	0.75	49	#210
Granite NB thru   thru/right	A	8.5	0.22	21	66
Granite SB left/thru   thru	B	14.8	0.32	31	79
Granite SB right	B	13.4	0.05	0	28

# = 50<sup>th</sup>/95<sup>th</sup> percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for the 95<sup>th</sup> percentile queue is metered by the upstream signal.

~ = The approach is above capacity for the 50<sup>th</sup> percentile traffic and the queue length could be much longer.

\*Defacto turn lane

**Table 14. Build Conditions (2022) Capacity Analysis Summary, PM Peak Hour**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Primary Study Area</b>					
<b>Burgin Parkway/Dimmock Street</b>	<b>B</b>	<b>16.0</b>	—	—	—
Dimmock EB left/thru/right	B	19.1	0.10	10	42
Dimmock WB left	C	29.9	0.72	69	#220
Dimmock WB thru/right	B	19.6	0.18	19	65
Burgin NB left/thru   thru	B	13.2	0.67	118	#362
Burgin NB right	A	8.7	0.23	0	47
Burgin SB left/thru   thru/right	B	17.2	0.83	179	#533
<b>Hancock Street/Dimmock Street/Adams Street/Johnson Avenue</b>	<b>F</b>	<b>&gt;80.0</b>	—	—	—
Dimmock EB left/thru	F	>80.0	0.98	116	#255
Dimmock EB right	D	35.6	0.63	113	159
Whitney WB left/thru/right	D	35.2	0.19	26	59
Hancock NB left	D	52.6	0.82	50	m#148
Hancock NB bear left	F	>80.0	>1.00	204	m#564
Hancock NB thru/right	B	11.3	0.47	40	m105
Hancock SB left/thru   thru/right	F	>80.0	>1.00	~317	#428
Adams SEB left/bear right	F	>80.0	>1.00	~259	#585
Adams SEB bear right/right	F	>80.0	>1.00	231	#597
Johnson SWB left/right	E	55.6	0.20	2	11
<b>Hancock Street/Washington Street</b>	<b>B</b>	<b>10.4</b>	—	—	—
Washington WB right   right	A	2.3	0.54	23	m50
Hancock SB thru   thru	B	16.8	0.56	246	444
<b>Washington Street/Temple Street/Coddington Street</b>	<b>C</b>	<b>33.0</b>	—	—	—
Washington EB left	E	58.3	0.90	107	#196
Washington EB thru	B	16.5	0.63	148	236
Washington EB right	A	7.4	0.50	111	29
Washington WB thru	D	50.8	0.91	284	#485
Washington WB right	C	20.8	0.06	5	30
Temple NB left	E	69.0	0.92	159	#313
Temple NB thru/right	A	7.3	0.63	62	152
Coddington SB thru	D	54.0	0.85	203	#350
Coddington SB right	C	33.4	0.17	4	65
<b>Hancock Street/Temple Street</b>	<b>A</b>	<b>5.6</b>	—	—	—
Hancock NB right   right	A	3.9	0.61	18	m35
Hancock SB thru   thru	A	7.2	0.63	200	m50
<b>Maple Street/Chestnut Street &amp; Hancock Street/Granite Street</b>	<b>D</b>	<b>45.3</b>	—	—	—
Granite EB left	E	71.0	0.97	267	#460
Granite EB right	C	28.9	0.17	0	60
Chestnut WB right	C	31.0	0.08	0	0
Hancock NB left	D	42.1	0.60	102	m108
Hancock NB thru	D	45.2	0.78	128	m#138
Hancock SB left	C	32.8	0.61	151	#254
Hancock SB thru	D	46.4	0.86	~239	#416
Hancock SB right	D	35.2	0.67	150	#269

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### Build Conditions (2022) Capacity Analysis Summary, PM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50 <sup>th</sup> Percentile Queue Length (feet)	95 <sup>th</sup> Percentile Queue Length (feet)
<b>Extended Study Area</b>					
<b>Newport Avenue/Furnace Brook Parkway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	F	>80.0	>1.00	~402	#611
Furnace Brook WB left/thru/right	C	34.3	0.76	286	419
Newport NB left/thru   thru	F	>80.0	>1.00	~390	#516
Newport NB right	C	22.7	0.25	55	111
Newport SB left/thru   thru/right	F	>80.0	>1.00	~768	#909
<b>Hancock Street/Furnace Brook Parkway</b>	<b>D</b>	<b>40.7</b>	<b>—</b>	<b>—</b>	<b>—</b>
Furnace Brook EB left/thru/right	D	44.2	0.94	161	#604
Furnace Brook WB left/thru/right	C	25.2	0.58	94	3246
Hancock NB left	C	23.1	0.25	8	40
Hancock NB thru/right	C	29.2	0.73	154	#418
Hancock SB left/thru	D	45.0	0.92	202	#546
Hancock SB right	E	63.7	0.87	69	#253
<b>Burgin Parkway/Newport Avenue/Adams Street</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Adams EB left	C	21.6	0.23	15	53
Adams EB thru/right	D	41.3	0.88	182	#464
Adams WB left/thru	D	35.2	0.79	130	#352
Adams WB right	C	21.1	0.22	15	81
Burgin NB left/thru   thru/right	F	>80.0	>1.00	~356	#623
Newport SB left/thru   thru/right	F	>80.0	>1.00	~463	#848
<b>Hancock Street/Huntley Road</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Huntley WB left/right	C	21.8	0.04	—	3
Hancock NB thru   thru/right	A	0.0	0.34	—	0
Hancock SB left/thru   thru	A	0.2	0.46	—	1
<b>Southern Artery/Sea Street/Coddington Street</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Southern EB left/thru   thru/right	F	>80.0	>1.00	~534	#660
Southern WB left/thru   thru	F	>80.0	>1.00	~233	m#324
Southern WB right   right	D	44.7	0.37	61	131
Coddington NB left/thru   thru/right	C	31.8	0.66	151	#316
Sea SB left   left	C	29.4	0.85	284	#511
Sea SB thru	B	18.5	0.30	75	156
Sea SB right	B	16.6	0.05	2	33
<b>Washington Street/Foster Street</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB thru/right	A	0.0	0.35	—	0
Washington WB left/thru	A	3.6	0.13	—	12
Foster NB left/right	F	56.9	0.84	—	180
<b>Washington Street/McGrath Highway</b>	<b>F</b>	<b>&gt;80.0</b>	<b>—</b>	<b>—</b>	<b>—</b>
Washington EB left/thru   thru/right	C	27.1	0.56	162	#422
Washington WB left*	D	52.5	0.86	157	#466
Washington WB thru/right	C	28.9	0.61	211	#601
McGrath NB left	D	45.1	0.60	66	m66
McGrath NB thru   thru/right	F	>80.0	>1.00	~628	m#557
McGrath SB left	E	56.9	0.78	144	200
McGrath SB thru   thru	D	40.4	0.63	212	248

**Build Conditions (2022) Capacity Analysis Summary, PM Peak Hour (cont.)**

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Elm Street</b>	—	—	—	—	—
Washington EB thru/right	A	0.0	0.56	—	0
Washington WB left/thru	A	4.1	0.15	—	13
Elm NB left/right	F	>80.0	>1.00	—	395
Elm SB left/thru/right	F	>80.0	0.34	—	30
<b>Mayor Hannon Parkway/Dennis Ryan Parkway/Miller Stile Road</b>	<b>E</b>	<b>70.1</b>	—	—	—
Dennis Ryan EB left	D	53.6	0.73	128	#395
Dennis Ryan EB thru/right	D	43.9	0.54	104	#340
Miller Stile WB left/thru/right	D	43.3	0.19	28	m84
Mayor Hannon NB left/thru   thru/right	F	>80.0	>1.00	~619	#758
Mayor Hannon SB left/thru   thru/right	C	22.1	0.83	181	221
<b>Elm Street/Miller Stile Road</b>	—	—	—	—	—
Elm EB left/thru	A	2.6	0.06	—	5
Elm WB thru/right	A	0.0	0.12	—	0
Miller Stile SB left/right	B	12.2	0.29	—	30
<b>Hancock Street/Mayor Hannon Parkway</b>	<b>F</b>	<b>&gt;80.0</b>	—	—	—
Mayor Hannon EB thru   thru/right	C	24.0	0.90	136	m#471
Mayor Hannon WB thru   thru/right	C	25.2	0.60	156	#391
Hancock NB left/thru/right	F	>80.0	>1.00	~460	#661
Hancock SB left/thru	F	>80.0	>1.00	~430	m#600
Hancock SB right	B	14.9	0.16	13	m34
<b>Hancock Street/Quincy Avenue/School Street/Elm Street</b>	<b>D</b>	<b>51.6</b>	—	—	—
School EB left	C	22.1	0.24	43	108
School EB thru/right	E	58.2	0.89	305	#684
Elm WB left	B	17.4	0.47	30	m83
Elm WB thru	C	21.2	0.24	51	m116
Quincy NB left	F	80.4	0.94	88	#219
Quincy NB thru/right	D	47.3	0.86	344	#535
Hancock SB left/thru	E	79.4	>1.00	~365	#553
Hancock SB right	A	7.8	0.29	35	m39
<b>Burgin Parkway/Granite Street</b>	<b>E</b>	<b>71.8</b>	—	—	—
Granite EB left	D	45.0	0.65	81	196
Granite EB thru   thru	D	41.5	0.62	81	171
Granite EB right	D	36.0	0.04	0	41
Granite WB left	D	41.3	0.49	52	137
Granite WB left/thru   thru	D	40.7	0.52	55	120
Granite WB right	D	38.4	0.21	17	79
Burgin NB thru   thru	D	42.8	0.94	265	#680
Burgin NB right	B	11.9	0.32	63	198
Burgin SB left	F	>80.0	>1.00	~110	#399
Burgin SB thru	F	>80.0	>1.00	~659	#1462
Burgin SB right	B	16.4	0.41	98	300
<b>Granite Street/School Street/Quarry Street</b>	—	—	—	—	—
Quarry EB thru	A	0.0	0.24	—	0
Quarry EB right	A	0.0	0.24	—	0
Granite WB thru	A	0.0	0.27	—	0
School NWB left	E	41.1	0.72	—	131

## Functional Design Report

Adams Green Transportation Improvements

### Build Conditions (2022) Capacity Analysis Summary, PM Peak Hour (cont.)

Intersection/Movement	LOS	Delay (seconds)	V/C Ratio	50th Percentile Queue Length (feet)	95th Percentile Queue Length (feet)
<b>Extended Study Area (cont.)</b>					
<b>Washington Street/Maple Street</b>	—	—	—	—	—
Washington EB thru/right	A	0.0	0.37	—	0
Washington WB left/thru	A	0.2	0.01	—	1
<b>Granite Street/Whitwell Street</b>	<b>B</b>	<b>16.7</b>	—	—	—
Whitwell EB left/thru	C	32.8	0.80	63	#242
Whitwell EB right	B	17.2	0.26	17	83
Granite NB left	B	16.3	0.11	7	48
TJ Maxx WB left/thru/right	B	13.7	0.62	36	125
Granite NB thru   thru/right	A	8.1	0.16	15	51
Granite SB left/thru   thru	B	15.3	0.43	46	111
Granite SB right	B	13.2	0.04	0	24

# = 50<sup>th</sup>/95<sup>th</sup> percentile volume exceeds capacity. Queue may be longer. Queue shown is maximum after 2 cycles.

m = Volume for the 95<sup>th</sup> percentile queue is metered by the upstream signal.

~ = The approach is above capacity for the 50th percentile traffic and the queue length could be much longer.

\*Defacto turn lane

## Heavy Commercial Vehicle Exclusion

As a part of the preferred design, the study team is proposing to instate a heavy commercial exclusion through the southern portion of the project area. This exclusion includes the following sections of roadway, which lie wholly within the City of Quincy:

- Granite Street between Ross Way and Hancock Street;
- Hancock Street between Chestnut Street and Temple Street; and,
- Temple Street between Hancock Street and Washington Street.

A study was conducted to determine whether a heavy commercial vehicle exclusion in this area is justified and meets one of the following warrants as described in the Massachusetts Amendments to the MUTCD and the Standard Municipal Traffic Code:

- A volume of heavy commercial vehicles, which usually is in the range of 5% to 8%, reduces the utilization of the facility and is a cause for substantial reduction in capacity or safety.
- The condition of the pavement structure of the route to be excluded indicated that further repeated heavy wheel loads will result in severe deterioration of the roadway.
- Notwithstanding or foregoing, in certain instances where land use is primarily residential in nature and a municipality has requested exclusion only during hours of darkness, a specific night exclusion may be granted.

## Data Collection

Twenty-four-hour counts were conducted on Hancock Street between Chestnut Street and Temple Street on Tuesday, February 14, 2012. The counts for both the northbound and southbound directions were broken into 30 minute intervals separating commercial vehicles with a carrying capacity over 2.5 tons and all other vehicles. Volumes and heavy commercial vehicle percentages are shown in **Table 15**.



**Table 15. Heavy Commercial Vehicle Percentages**

Time	Total Volume	Heavy Vehicles	% HV
12:00	95	1	1.1%
12:30	59	0	0.0%
1:00	43	2	4.7%
1:30	26	2	7.7%
2:00	21	1	4.8%
2:30	19	4	21.1%
3:00	23	4	17.4%
3:30	21	2	9.5%
4:00	22	3	13.6%
4:30	40	3	7.5%
5:00	104	17	16.3%
5:30	145	9	6.2%
6:00	241	13	5.4%
6:30	427	20	4.7%
7:00	577	14	2.4%
7:30	741	25	3.4%
8:00	680	20	2.9%
8:30	672	21	3.1%
9:00	687	22	3.2%
9:30	665	17	2.6%
10:00	615	16	2.6%
10:30	651	18	2.8%
11:00	704	27	3.8%
11:30	690	20	2.9%
12:00	765	23	3.0%
12:30	850	19	2.2%
1:00	786	20	2.5%
1:30	727	13	1.8%
2:00	741	12	1.6%
2:30	734	16	2.2%
3:00	763	15	2.0%
3:30	776	14	1.8%
4:00	796	13	1.6%
4:30	816	14	1.7%
5:00	863	19	2.2%
5:30	863	8	0.9%
6:00	841	10	1.2%
6:30	742	8	1.1%
7:00	716	6	0.8%
7:30	607	4	0.7%
8:00	494	3	0.6%
8:30	429	2	0.5%
9:00	454	6	1.3%
9:30	320	4	1.3%
10:00	264	4	1.5%
10:30	254	1	0.4%
11:00	193	4	2.1%
11:30	160	3	1.9%
<b>TOTAL</b>	<b>22,922</b>	<b>522</b>	<b>2.3%</b>

The total volume for the 24-hour count was 22,922 vehicles with an average of 2.3% heavy commercial vehicles. The percentage of heavy vehicles is greatest during the early morning hours.

### **Alternate Route**

The alternate route, Mayor Hannon Parkway, is parallel to and approximately ¼ mile from the exclusion route. Opening in October 2011, Mayor Hannon Parkway was built as a major connection between I-93 and Route 3A. It is envisioned that the majority of heavy vehicle traffic would access the New Quincy Center Development area using Burgin Parkway, Mayor Hannon Parkway, or Washington Street. **Figure 26** shows the proposed heavy commercial vehicle exclusion as well as alternate routes within the area.

### **Physical Characteristics of Heavy Commercial Vehicle Exclusion Route**

The length of the heavy commercial vehicle exclusion route is approximately 1,200 feet. The majority of this area is to be reconstructed with new pavement and sidewalk as a part of this project. The width of the proposed Temple Street and Hancock Street cross-sections range from 35 feet to 50 feet. All travel lanes in this section are designed to be 11 feet wide. On-street parking is also proposed along sections of Hancock Street and Temple Street.

Granite Street is proposed to be approximately 62 feet wide with 11-foot travel lanes and 5-foot bicycle lanes. On-street parking will not be allowed on Granite Street within the project area. Granite Street will be repaved from Hancock Street to Ross Way, where construction will match into existing conditions.

### **Zoning/Property Types**

The heavy commercial vehicle exclusion route as well as the alternate route lies within the Quincy Center districts. These districts are zoned for retail/consumer services, multifamily dwelling, and office. The building property types along the heavy commercial vehicle exclusion are primarily businesses, retail, and restaurants.

### **Existing Traffic Control**

Currently there are traffic signals on either end of the heavy commercial vehicle exclusion route at Washington Street/Coddington Street/Temple Street and Burgin Parkway/Granite Street. Hancock Street/Granite Street is also signalized, which will be combined with the unsignalized Hancock Street/Chestnut Street/Maple Street intersection under proposed conditions to operate as one intersection.

It is also proposed that the pedestrian crossing at Hancock Street/Temple Street remain with Hancock Street in front of City Hall being closed. This crossing will be raised with hybrid beacons for traffic control.



**Figure 26. Heavy Commercial Vehicle Exclusion and Alternate Route**





## **Need for Heavy Commercial Vehicle Exclusion**

The City of Quincy wishes to calm traffic in Quincy Center, making it more pedestrian- and bicycle-friendly. Quincy Center is ranked #8 in the state for pedestrian crashes. There are regional roadways, Burgin Parkway, Southern Artery (Route 3A), and Mayor Hannon Parkway, surrounding Quincy Center that can be used by heavy commercial vehicles to access the existing businesses as well as those planned for New Quincy Center. In order to improve pedestrian and bicycle safety and comfort, the City is requesting that a heavy commercial vehicle exclusion be imposed upon Temple Street from Washington Street to Hancock Street, Hancock Street from Temple Street to Granite Street, and Granite Street from Hancock Street to Ross Way. Excluding heavy vehicles on these sections will create a safer environment for pedestrians and bicycles.

A letter from the City of Quincy stating the need for the truck exclusion is included in **Appendix E**.

## Traffic Management during Construction

### Overall Approach to Traffic Management

The implementation of Adams Green and its respective improvements will involve reorganization of the traffic circulation. To maintain flow of traffic during construction, Hancock Street needs to remain open for as long as possible. Geometric improvements to Hancock Street, Washington Street, and Temple Street, and traffic signal equipment upgrades should be completed before the closure of Hancock Street between Washington Street and Temple Street takes place. Once these pieces are complete, the majority of the traffic improvements for the new circulation will be in place. At that point, Hancock Street can be closed permanently. The construction of the Adams Green park space will then be completed as a part of another contract.

### Conclusion

The Adams Green Transportation Improvement Project will create the roadway infrastructure not only to support the proposed Adams Green park space but also the future New Quincy Center Development. The roadway is designed to promote access and mobility for all users by creating a "Complete Street".

Traffic calming measures have been put into place to slow down vehicles and discourage commuter traffic from traveling through Quincy Center. Through traffic can use Burgin Parkway, Southern Artery, and Mayor Hannon Parkway to travel around Quincy Center.

The geometric and signal design will improve safety in an area where pedestrian and bicycle crashes are prominent. Narrowing of the roadway, raised crosswalks, and updated signal timings, all support pedestrian activity and safety. Providing on-street bicycle lanes will encourage bicyclists to ride on the roadway rather than the sidewalks.

Overall, this project will play a key role in the revitalization of the town center and create connections to offices, residences, historic sites, recreation, entertainment, and public transportation.





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